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EDITORIAL.

Quinine Pills.

ONLY one of the manufacturing firms whose reputation for fair-dealing had been put in jeopardy by the late analyses of quinine pills has so far taken active steps to meet the accusation face to face, and to subject their product to a rigorous test, under circumstances which would exclude the possibility of faults or errors. After a lengthy correspondence between the firm of *McKesson & Robbins*, of New York, Prof. C. L. Diehl, of Louisville, Mr. R. H. Cowdrey, of the Chicago *Pharmacist*, and several chemists who had been invited to take part in the final analysis, an arrangement was arrived at to this effect, that the remaining batch of the original vial of pills, still in the hands of Prof. Diehl, should be analyzed by Dr. Polenske, the chemist of the manufacturers, in presence of two chemists of reputation, Mr. Wm. M. Habirshaw, of New York, and Prof. P. T. Austen, of Rutger's College. The precautions taken to prevent every possible chance of the samples being tampered with, either in transit or during the assay, were such as must satisfy the most scrupulous. The accuracy of the process itself was put to the test by subjecting samples, of known origin and composition, prepared without the knowledge of the chemists, to the same manipulations as the crucial specimen.

For a detailed account of the whole correspondence, and the narrative of the witnesses—all of which is given in full in the *Pharmacist* for August—we have not sufficient space; we shall content ourselves for the present with quoting the results.

1. *Comparative Table Showing the Value of the Method of Assay Employed.*

Samples 1 and 2 were gelatin-coated quinine pills, prepared in Chicago, in presence of witnesses, from quinine of known origin. No. 1 was made from the quinine as taken from the original can. No. 2, from a mixture containing 95 per cent of this quinine, and 2½ per cent each of the sulphates of quinidine and cinchonidine. The computation of this table is made on the basis of 50 two-grain pills, or 100 grains of the expected quinine.

	Total Alkaloids as Sulphates.	Quinine Sulphate.	Total Alkaloids as Sulphates.	Quinine Sulphate.	Foreign Alkaloids.	
Number of Sample.	I	I	II	II	I	II
First Assay.....	104.5	99.6	102.6	94.65	4.9	8.0
Second Assay.....	101.4	96.1	102.75	92.75	5.3	10.0
Maximum of errors in manipulation	3.1	3.5	0.15	1.9	0.4	2.0
Average of amount found.....	102.95	97.9	102 67	93.70	5.1	9.0
Amount actually present	100 3	100.3	99.99	93.80	5.1	10.0
Difference showing error of method..	2.65	2.4	2.68	0.1	...	1.0

This is a very satisfactory proof of the general reliability of the process. It is to be regretted, however, that the sulphate of quinine used in making up these test-samples was not itself previously analyzed to ascertain the percentage of impurities contained therein. However, the quinine was not on trial here, but the method of assay.

2. *Table Showing the Respective Quantity of Total Alkaloids, etc., as Obtained by Prof. Diehl, and as Found by the Renewed Assay.*

	Total Alkaloids in 50 pills.	Corresponding to crystallized Sulphate, calculated as Quinine.	Quantity of Herapathite obtained.	Corresponding to crystallized Sulphate of Quinine.	Total foreign Alkaloids, calculated on the basis of Quinine.	Per cent of foreign Alkaloids.
Prof. Diehl	4.900	103.80	6.260	73.11	30.69	29.66
New Assay.....	4.410	93.47	7 629	89.10	4.37	4.6

All the analytical figures and data obtained during the assay are quoted in the paper, which is accompanied by the official reports of the two chemists, containing copies of their note-books. From these figures, Mr. Cowdrey has calculated the above results, which may, therefore, be independently controlled by any one who will consult the original.

The result thus obtained is one that cannot but afford great satisfaction to the manufacturers, and which will, in a great measure, allay the alarm among the professional, as well as the lay public, raised by the reports heretofore circulated.

It would be highly desirable that other respectable firms, equally affected by the reports, would follow the example

of Messrs. McKesson and Robbins. We have no doubt whatever that they would not have to fear for the results.

Before the above paper was published, and while it was still considered possible that the previously published analysis of quinine pills was essentially correct, there appeared an article from the pen of our friend, Prof. J. U. Lloyd, of Cincinnati, in which he endeavored to ascribe the supposed deficiency of quinine—if such did really exist—to causes other than wilful dishonesty of the manufacturers. It was quite natural that such an argument should present itself to the mind. For, with the knowledge that the suspecting public will usually pitch upon quinine pills as an object of complaint, and that public analysts are fond of selecting them for assay, it is scarcely credible that a manufacturer would risk his reputation and business prospects in so reckless a manner as to wilfully reduce the amount of quinine in his pills.

Among the possible causes that might be supposed to be able to produce a deficiency, there is one which Prof. Lloyd considers, very properly, at least worthy of consideration. This is the possibility that, under certain conditions, the quinine in the pills may possibly become altered, so much as to show reactions different from those which it had while unaltered and crystallizable. He distinctly says that he does not wish to be understood as asserting this as a fact, but he regards it at least as a possibility. In support of this, he cites some interesting facts concerning certain alkaloids with which he has had considerable experience. He says:

"The study of organic bodies teaches that, under certain conditions, changes result which either modify or destroy the substance under consideration. This feature of the case is exhibited simply in the drying of a plant, whereby changes follow, sometimes desirable from a therapeutical point, but which are more frequently injurious. Alterations take place in the plant in our warerooms, through oxidation, or as the moisture alternately enters them, and is driven off in consequence of the varying humidity of the atmosphere, and certain proximate principles are thus expelled, or perish. If, for example, the root of *Sanguinaria canadensis* is prime, exhibiting, when freshly broken, a beautiful red color, under ordinary conditions it will change by time, until perhaps the characteristic red color will entirely disappear, the alkaloid being either destroyed or broken from its natural combination. Other and similar examples are familiar, and we therefore find that many of our plants decrease in value by age, and finally become worthless, even though the substances which give them their therapeutical activity are generally permanent when purified from extraneous bodies, or at at least are not volatile.*

It is well known that many organic bodies which are prone to decompose if moist, are permanent when dry. It is also to be admitted that under certain conditions an organic principle may be stable, and under others, such as the influence of peculiar ferments, etc., it may readily decompose. Those who work among the organic constituents of plants are often confronted with problems such as we have named, and in making examinations should endeavor to guard against confounding educts with products. An example brought forcibly to our notice some time ago may serve as an illustration:

In making a batch of the yellow alkaloid of *Hydrastis canadensis* (berberine) in order to soften the ground root, as is usual with the writer, preparatory to percolation, it was sprinkled with water until fairly moist. Now it was found that but half of the root, about five hundred pounds, could be worked in the percolator. This portion was exhausted as quickly as possible, and then the remaining portion was placed in the percolator, and exhausted. The two lots were worked separately and in the same manner, and as a result it was found that the first portion yielded a good proportion of berberine, but the second portion scarcely produced enough berberine to repay expenses of manipulation. The alkaloid in the second batch was destroyed, although the material had neither fermented, under the ordinary acceptation of the word, nor putrefied.

Through the influence of some principle present in the root, and the action of, perhaps, both moisture and oxygen, the yellow alkaloid disappeared. Under the same circumstances, the purified alkaloid, or salts of this alkaloid, will remain apparently unchanged for a considerable length of time. The destruction of the alkaloid in the example named was accompanied by an interesting feature, a very great increase of the white alkaloid, for this second batch yielded far above the average of this substance, and much more than did the first half. The inference in this case is that the yellow alkaloid changed and produced more or less of the white alkaloid, and that the variation in proportion of the alkaloids was in consequence of the different methods of manipulation as applied to the crude material. After these alkaloids are separated from the plant, we have no record of either of them having ever been converted into the other. Since almost, if not all, the plants which yield berberine abundantly also yield a white alkaloid, we may well infer that in the economy of nature they are related, and that one of them is produced by the destruction of the other, probably the yellow alkaloid, being first formed, by its disintegration yielding more or less of the white alkaloid."

In view of the results obtained by the renewed analysis of the quinine pills, as related above, it will not be necessary to have recourse to the idea advanced by Prof. Lloyd in the present instance. But we are quite sure that it deserves careful consideration, since there are enough facts known, connected with the cinchona alkaloids themselves, which show that changes are quite possible, and even common. The principal alteration which we are acquainted with at present is the change from the crystalline to the amorphous condition, which involves, more or less, changes in properties. It is also known that these changes do not always require the agency of heat to bring them about; the presence of certain acids (f. i., phosphoric, tartaric) in conjunction with moisture and exposure to air being sufficient to cause the alteration in time. It would form an interesting study to follow up these changes so as to learn the precise conditions under which they will make their appearance.

* Sulphate of morphine is usually considered permanent, and yet, to our knowledge, different lots bearing the label of one of our most reputable manufacturers, and in original vials, become so dissolved by age in the hands of a speculator as to be unmarketable. Decompositions undoubtedly took place until one of the products had changed the appearance of the salt, rendering it as dark as common filter paper.

"Sulamita Vitulus."

CONCERNING this new antineuralgic, of which we spoke in our last number, p. 241, we have received a note from one of our correspondents in Europe, largely engaged in the manufacture of essential oils and therefore directly interested in the subject. He states that diligent inquiries have so far only succeded in ascertaining that the plant meant is *Melastoma Ackermanni*, the leaves of which are used in South America for the preparation of an essential oil.

Correction.

ON page 251 of our last number, in the communication from Mr. H. E. Hoelke of St. Louis, on the Estimation of Silver, the equation should read thus:

$$2\,AgCl_2 + 2\,Ag = Hg_2Cl_2 + 2\,AgCl.$$

The Washington Meetings.

OUR readers are probably all aware of the approaching meetings in Washington of the American Pharmaceutical Association and the National Retail Druggists' Association. The latter is to have a preliminary meeting on the evening of the 8th of September to arrange for the formal meeting which will take place on the 10th. There is every prospect of a large gathering and of sessions of unusual interest and importance.

[ORIGINAL COMMUNICATION.]

The Composition of Spirit of Nitrous Ether, U.S.P.

BY HENRY B. PARSONS.

THE U. S. Pharmacopœia furnishes a process for the preparation of a crude nitrous ether, which is subsequently water-washed and mixed with nineteen times its weight of alcohol to produce the spirits.

In other words, spirit of nitrous ether of the Pharmacopœia contains five per cent of washed nitrous ether prepared in accordance with its own directions.

There is no doubt that the washed ether thus produced is quite uniform in composition, and that the spirit made therefrom is vastly better than what has usually been sold as "U. S. P." The opportunity to partially purify the crude ether by water-washing is a good thing, and the absence of undue amounts of aldehyde and free nitric and acetic acids is assured.

The supposition was, probably, that the washed ether layer consisted chiefly of real ethyl nitrite, and that, if the spirit really contained five per cent of this washed ether, a quantitative test should show not less than four per cent of real ethyl nitrite. It is, however, a fact that strict compliance with pharmacopœial directions for manufacture will not insure a product which will meet this quantitative requirement.

The reason for this discrepancy is probably to be found in the fact that the washed nitrous ether of the Pharmacopœia is not as simple in composition as has been imagined.

In nearly all text- and reference-books the statement is made that the action of nitric acid upon alcohol results in the production of ethyl nitrite ($C_2H_5.NO_2$), together with aldehyde (C_2H_4O) and acetic acid ($HC_2H_3O_2$). This statement is perfectly correct as far as it goes, but the exact conditions as to proportions and strength of alcohol and acids, and the proper management of the reaction in order to attain these results, are wanting. With proportions and conditions all right, it is possible to manage the reaction so that little else but the aboved-named substances will be produced.

In order to arrive at a better understanding of the reaction occurring when pharmacopœial directions are followed, it may be well to first study the reactions upon which most calculations have been based (1 and 2 following).

1. *Formation of Nitrous Ether and Aldehyde.*

The following equation explains this reaction:

Alcohol	+	Nitric Acid	=	Aldehyde	+	Ethyl Nitr.	+	Water.
$2C_2H_6O$	+	HNO_3	=	C_2H_4O	+	$C_2H_5NO_2$	+	$2H_2O$

Aldehyde is produced from alcohol by oxidation, and is very easily changed, by further oxidation, to acetic acid. In other words, it is intermediate between alcohol (C_2H_6O) and acetic acid ($C_2H_4O_2$), as appears from its formula (C_2H_4O). As a matter of fact, very little aldehyde is formed from alcohol if strong nitric acid is used as directed by the Pharmacopœia. It is probable that the use of weak nitric acid, not in excess, and at a comparatively low temperature would result in the production of a larger proportion of aldehyde.

Almost complete freedom from aldehyde is one of the good features of spirit of nitrous ether prepared in accordance with the new Pharmacopœia.

2. *Formation of Nitrous Ether and Acetic Acid.*

Alcohol	+	Nitric Acid	=	Acetic Acid	+	Ethyl Nit.	+	Water
$3C_2H_6O$	+	$2HNO_3$	=	$HC_2H_3O_2$	+	$2C_2H_5.NO_2$	+	$3H_2O$

To obtain the maximum amount of ethyl nitrite from the 31 parts of 91 per cent alcohol recommended by the Pharmacopœia, would require 36.82 parts of pharmacopœial nitric acid (69.96% real HNO_3), instead of 9 parts of nitric acid, as directed.

It is undoubtedly true that the above reaction is the principal primary reaction, and that in skilful hands, and with due precautions, it may be practically employed on the small scale. Where successfully applied it would yield:

Ethyl nitrite..... ....30.66 parts.
Acetic acid..... .....12.27 "

The ethyl nitrite thus produced would contain only traces of acetic acid.

In fact, however, the mixture of such a large proportion of strong nitric acid with 31 parts of alcohol induces such violent action as to endanger not only the apparatus used, but the eyes of the operator.

In order to obtain the largest possible yield of ethyl nitrite from the alcohol used it is necessary to increase the amount of nitric acid to as near the above proportion as is safe. In the small way it is possible to use equal weights of nitric acid and alcohol, but on a larger scale these proportions prove dangerous. The amount of nitric acid which can safely be used depends so much upon the skill of the operator, and his facilities for properly managing the reaction, that at the present time I am unable to recommend proportions for general use which shall be both safe and economical.

Just here appears a difficulty which has, apparently, been overlooked, and which it seems best to emphasize at this time, viz.:

When nitric acid, either alone or in presence of sulphuric acid, acts upon excess of alcohol, under the conditions prescribed in the U. S. Pharmacopœia of 1880, *a very considerable amount of acetic ether* ($C_2H_5.C_2H_3O_2$) *is formed, and is present in the washed nitrous ether of the Pharmacopœia.*

Any person may be convinced of this fact by subjecting the pharmacopœial washed nitrous ether to carefully regulated fractional distillation. Ethyl nitrite is first distilled, and, on raising the heat, nearly pure acetic ether is next obtained.

3. *Formation of Nitrous Ether and Acetic Ether. The Pharmacopœial Reaction.*

The following equation gives the simplest explanation of the simultaneous formation of nitrous and acetic ethers:

Alcohol	+	Nitric Acid	=	Ethyl Acetate	+	Ethyl Nitrite	+	Water.
$4C_2H_6O$	+	$2HNO_3$	=	$C_2H_5.C_2H_3O_2$	+	$2C_2H_5NO_2$	+	$4H_2O$.

This I believe to be the principal reaction which occurs when pharmacopœial directions are followed, and careful quantitative experiments give results quite closely in accord with this supposition.

Using 31 parts of 91% alcohol, as directed by the Pharmacopœia, the above reaction would necessitate the use of 19.32 parts of absolute nitric acid, equivalent to 27.62 parts of pharmacopœial nitric acid (sp. gr. 1.42 = 69.96% real HNO_3). The theoretical products would be:

Ethyl nitrite .....23.00 parts, boils at 18° C.
" acetate.... ...13.49 " " " 76° C.

If the heat were pushed from 80° to 82° C. (176° to 179.8° F.), as directed by the Pharmacopœia, the total distillate will be equal to the sum of the two ethers, or 36.49 parts. The unwashed ether-mixture would then have the following percentage composition:

Ethyl nitrite..... .... 63.03%.
" acetate..... 36.97%.

If water-washing did not change these relative proportions, it will be seen that spirit of nitrous ether containing five per cent of the washed nitrous ether would contain:

Ethyl nitrite .... 3.15%.
" acetate..... 1.85%.

Evidently the pharmacopœial requirement that quantitative assay of spirit of nitrous ether shall reveal the presence of not less than four per cent of real ethyl nitrite is too strict in view of the results obtained by the prescribed process.

4. *The Amounts of Nitrous Ether and Acetic Ether Produced by the U. S. P. Formula.*

Upon the basis of equation 3, the use of nine parts U. S. P. nitric acid in presence of excess of alcohol would result in the production of:

Ethyl nitrite ..... 7.50 parts.
" acetate... ..... 4.40 "

The amount of 91% alcohol consumed in this reaction would be 13.13 parts, and 17.87 parts would be wasted.

It will be seen that the total amount of distillate would be, before washing, 11.90 parts, and, in fact, 11.00 parts is the usual product in manufacturing.

In studying this pharmacopœial process, it seemed to the writer that the use of more nitric acid, in divided portions, might serve to utilize the 17.87 parts of alcohol above referred to as wasted. Accordingly, several test experiments were made as follows:

After the first distillation, the mixture in the flask was cooled, a weighed portion of nitric acid was added, and distillation repeated. It was found that five distillations, each time with smaller portions of nitric acid, were necessary to obtain the maximum yield of distillate. The following are the actual results:

	1ST EXP'T.		2D EXP'T.	
	Nitric Acid.	Distillate.	Nitric Acid.	Distillate.
1st distillation...	.0.800	0.900	0.800	0.900
2d distillation.....	.800	.890	.720	.780
3d distillation.....	.560	.350	.640	.490
4th distillation.....	.400	.140	.400	.100
5th distillation.....	.400	.100	.400	.100
	2.960	2.380	2.960	2.370
Water-washed ether.....		2.210		2.250

It is noticeable that in the first and second distillations, equation 3 is well borne out by the quantitative results, but that later the amount of product does not warrant the belief that the same reaction occurs. Just at this point, also, the workmen employed have always found considerable trouble necessary to avoid explosion. It is, therefore, hardly profitable or advisable to distill more than twice.

The direction of the Pharmacopœia to "heat rapidly, by means of a water-bath, until strong reaction occurs, and the temperature reaches 80° C. (176° F.)" might, perhaps, be advantageously changed. In almost every case, the reaction begins at 70° C. (158° F.) and continues at that temperature for some time with little or no need of heating. Toward the last, if the heat be maintained at 70° C., the reaction is completed, and the distillate contains less acetic ether (boiling point 76° C.) and alcohol (boiling point 78° C.) than would be present if the heat were rapidly pushed to 80° and 82° C., as directed by the Pharmacopœia.

The writer is by no means disposed to condemn the pharmacopœial process or product, but believes that, with certain modifications as regards details, it may furnish a very uniform and medicinally valuable product. So long as the present pharmacopœia is in force it seems hardly advisable to propose a process differing radically from the one now prescribed. It seems, however, that the use of larger amounts of nitric acid (insuring larger yield), and the regulation of the temperature so as not to greatly exceed 70° C. (158° F., the temperature required for the reaction) are allowable modifications, in view of the fact that the washed ether contains less acetic ether than that of the pharmacopœia.

The writer would also suggest that those analysts who propose the investigate "sweet spirits of nitre" would do well to first prepare a few pounds, strictly following the directions of the pharmacopœia, in order that they may try their own standards in the light of practical possibilities. Were this more frequently done, there might be fewer charges of dishonestly from the analysts, and fewer counter charges of incompetence from the manufacturers.

There are several points connected with the manufacture and valuation of this important article which are present subjects for study. It is hoped that practical results may be reached which will be of general interest.

352 Front street,
New York, July 26th, 1883.

Dr. L. S. McMurtry has retired from the editorship of the Louisville *Medical News*, and is succeeded by Dr. H. A. Cottell, formerly associated with Dr. Cowling in the same relations.

Microscopical Examination of the Leaves of Liatris Odoratissima, Willd.

BY W. KERR HIGLEY, OF LAKE GENEVA, WIS.

Some months since, Dr. Thomas F. Wood, of Wilmington, N. C., sent me some specimens of this plant with a request that I examine and study the crystal formed on the surface and within the tissue of the leaf.

A description of the plant will not be necessary, as Dr. Wood has already fully described it in the New Remedies of March, 1882.

The following is a record of my work:

Method of Examination.—On the receipt of the specimens, the leaves were prepared in the following ways: 1. Some of them were placed in water. 2. A number were preserved in dilute alcohol. 3. Some were placed in strong alcohol. 4. Others were dried both with and without pressure. Sections were then made across the leaf at right angles to the midrib, and at various other angles, and also parallel to the same. These sections were examined in different media, with magnifying powers varying from one hundred to five hundred diameters.

That the structure of the leaf might be thoroughly understood, between two and three hundred of these sections were rendered clear for examination by placing them in a weak solution of caustic potash as a medium.

Besides the sections, several slides were prepared from both the upper and lower epidermis of the leaf. These slides were examined for the purpose of finding what products might be upon the surface, and also to study the shape and form of the cells and stomata. It was also hoped that this examination of the epidermis might lead to the discovery of the origin of the crystals and masses said to occur on the leaves.

MICROSCOPICAL EXAMINATION.

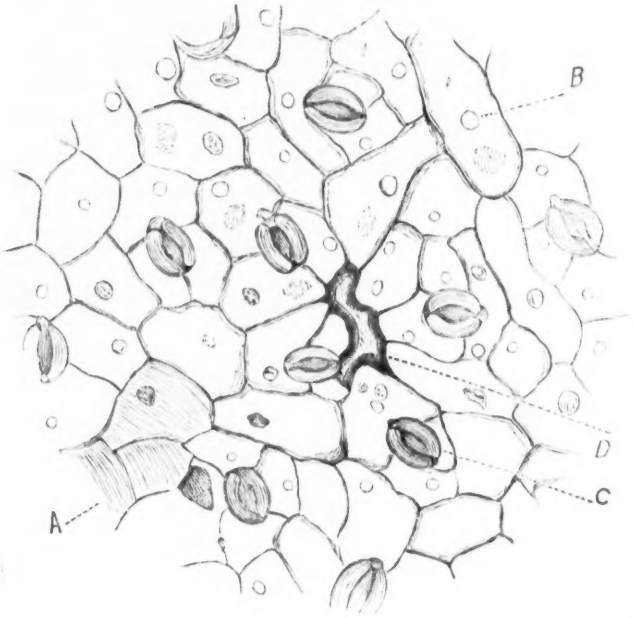
Epidermis.—The cells of both the upper and lower epidermis are inclined to be polygonal, and a number are distinctly hexagonal. They, however, vary very much in form. Those of the upper side (Figs. 1 and 2) are much more regular in outline, but vary more in size than those of the under side. The latter (Fig. 3) are uniformly larger, and have more rounded angles. The cells appear finely striated, especially those on the upper side of the leaf (Fig. 1, *a*). Drops of oil are found in nearly all of the cells of both the upper and lower epidermis. Those of the upper side, however, seem to be more variable in size and more numerous (Figs. 1, 2, and 3, *b*). Numerous stomata are visible on both sides of the leaf (Figs. 1, 2, and 3, *c*). These are not so regular on the under surface as above. Scattered here and there, but quite numerous, are dark-yellow spots which are very beautifully surrounded by tabular cells arranged very symmetrically. These are the openings to the glands. As a rule, these openings were hexagonal, and with about the same radius in each direction (Fig. 2, *d*). But in a few cases, they were much longer than broad, and very irregular in outline (Fig. 1, *d*).

Transverse Section.—The structure of the leaf is very readily studied by a section. The cells are very distinctly arranged in layers, as follows: 1. The upper cuticle and epidermis (Fig. 4, *a*). 2. A row of palisade cells arranged in a very regular manner, and very symmetrical in outline (Fig 4, *b*). 3. The cells of the mesophyll, which are more or less polygonal in outline, and do not vary much in size (Fig. 4, *c*). 4. The palisade cells of the under side, which are more irregular in size and arrangement than those of the upper side (Fig 4, *d*). And lastly, the epidermis and cuticle of the under side, in which the cells do not have so regular an outline as those of the upper epidermis (Fig. 4, *e*).

Scattered through the cells of the mesophyll, and also in the palisade and epidermal cells, though not so commonly, are numerous drops of oil (Fig. 4, *f*). These drops of oil vary much in size and color; some of them being quite green, and others a decided yellow.

Here and there in both the upper and lower epidermis are deep indentations shaped very much like the graduated

FIG. I. (×450.)



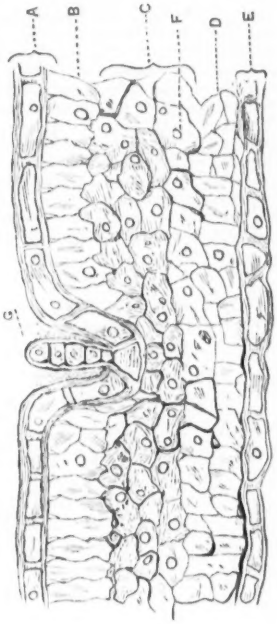
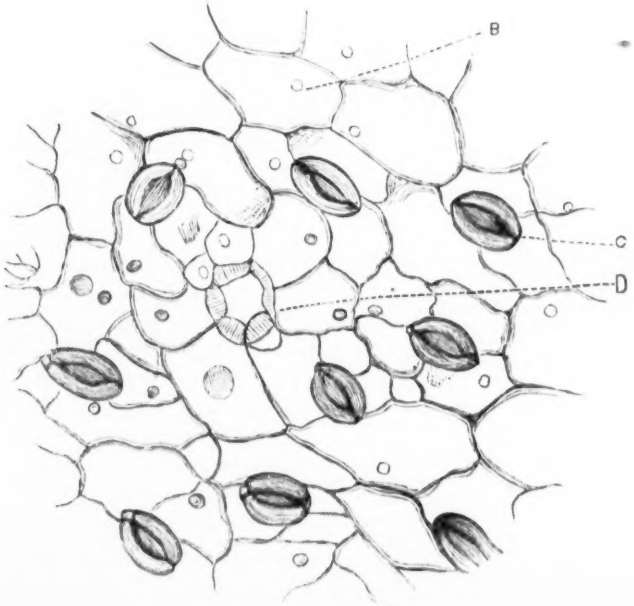


FIG. IV.

FIG. II. (×450.)



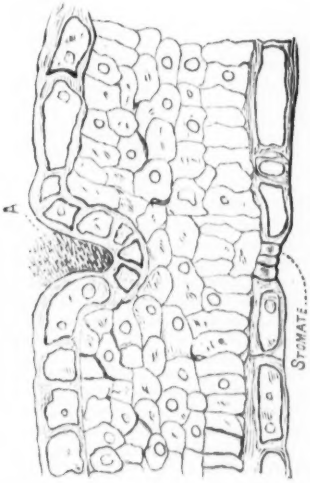


FIG. V

glass of the prescription desk. In these depressions are situated the glands. These glands rest upon a wedge-shaped cell of the epidermal layer, and are apparently three to five times divided by a thin membrane. In each one of these cells are drops of oil and a granular matter. The whole gland is covered with the cuticle (Fig. 4, *g*).

A fact of great importance is that the granular matter found within the gland is also found surrounding the gland and filling more or less the extra glandular portion of the depression, and further, that in the older leaves the walls of the glands seem to be dissolved, and the whole mass is granular, and fills the depression above the level of the epidermis. Here and there in the mass is a distinct crystal (Fig. 5, *a*). It seems as though this would explain the origin of the globular crystalline masses that are found upon the surface of the mature leaves.

Crystals.—In the examination of the epidermis, I was rewarded by finding that by far the majority of the crystals were around or directly over the glands.

Under a small hand-lens the leaves appear much furrowed, and here and there over the surface rather clear crystalline masses could be seen. The largest of these masses, as a rule, did not appear to be more than one-thirty-second of an inch in diameter, though a few were at least one-twentieth. After removing some of these masses it was evident that they had been situated near or over the glands; and in the case of the opening of the gland shown in Fig. 2, this was a fact. A stronger magnifying power revealed numerous crystals upon the surface, which could be easily washed off. The crystals that "are sometimes found on the surface of the leaves in the green state as the plant reaches its greatest maturity" are, I am convinced, from the structure of the leaf and from the position of these crystals near the glands, mere exudations from the glands, in most cases, at least. I did not find that they were within the cells of the epidermal tissue, but upon the surface of the leaf. In only a few instances was there any evidence that these surface crystals were secreted from the cells. It is probable that the origin of these few crystals was similar to that of the crystals that are present in the mesophyll. The cells of this tissue contained rather large crystals, but they were not present, to any extent, except as the leaf dried or was very mature. They seemed to be produced by drying, and hence they were doubtless products of the concentration of the cell-fluids.

Many crystals are produced in the cells of plants as they grow old, and approach the stage of dissolution or rest. It is my experience that this is especially the case with organic crystals.

During the progress of my work, the following valuable papers have been of great service to me:

An article in the *Proceedings of the American Pharmaceutical Association*, 1881, vol. xxix., p. 159.

A paper by Dr. Thos. F. Wood in the NEW REMEDIES for March, 1882.

A paper by Adolph W. Miller, M.D., on "Deer Tongue in Perfumery" in the *American Journal of Pharmacy*, 1875, p. 116.

Figs. 1, 2, and 3 were drawn with the aid of the camera lucida. Figs. 4 and 5 are diagrammatic.

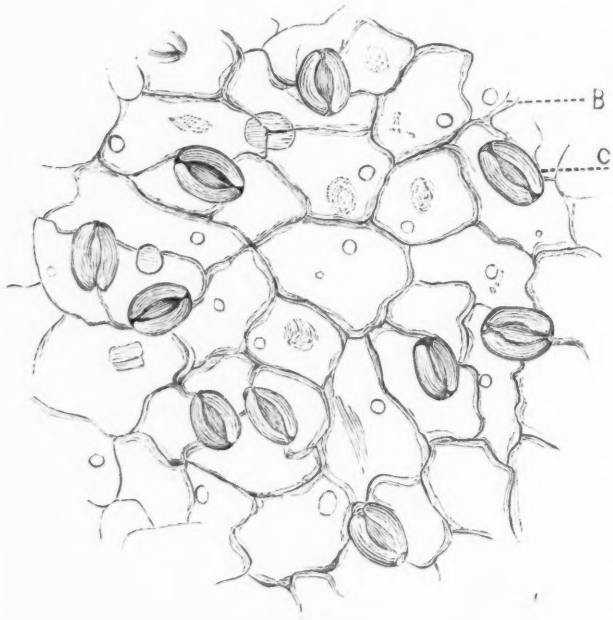


FIG. III. (×450.)

Yellow Oxide of Mercury and Cold Cream.

THESE may sometimes cause trouble when dispensed together. A case is reported in the *Wiadomosci farmaceutyczne*, in which the following prescription

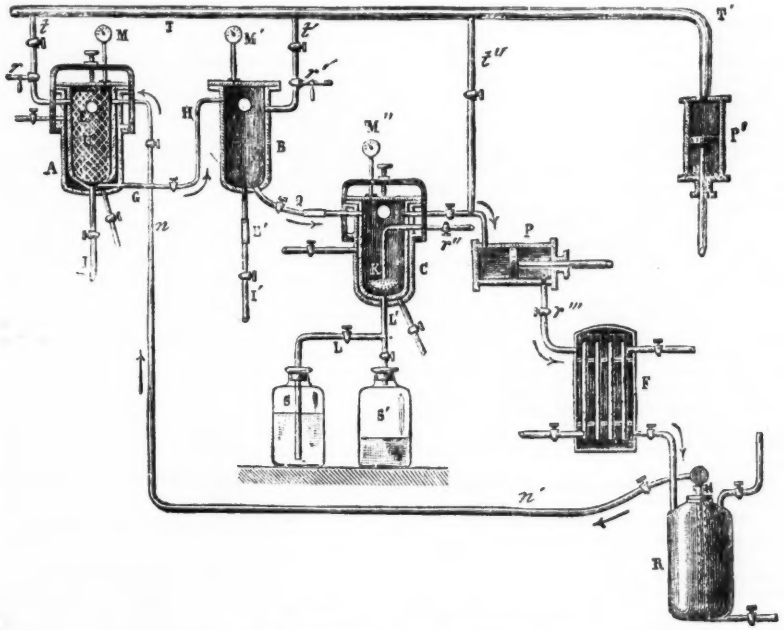
Hydrarg. oxidi flavi	gr. ½
Plumbi acetatis	gr. 2
Unguenti aquæ rosæ.....	ʒ 2

was prepared by several pharmacists. In some cases, the mixture turned white, and was thus dispensed; in other cases, it retained its yellowish tint unaltered. On closer examination, it turned out that the cause of the trouble lay in the cold cream, which, by keeping, had acquired an acid reaction from the separation of fatty acids. Freshly-prepared cold cream produced no change in the mixture.

It is, under all circumstances, advisable to keep but a small quantity of cold cream in stock, at least not more than is likely to be consumed in a month, particularly during warm weather. In winter time, a larger quantity may be prepared, and kept in a cold place.

New Mode of Extracting Perfumes and Essential Oils.

MR. LAURENT NAUDIN is the inventor of a process described in the *Moniteur Scientifique*, for the extraction of essential oils and perfumes, of which an abstract appears in the *Pharm. Journal and Trans.* of July 21st. In the paper the history of the various processes that have been employed is given, and speaking of the use of volatile solvents, which has of late years attracted much attention and been made the subject of may experiments, the writer gives the following summary of the reasons why the use of volatile solvents has not been rendered practical: (1) Owing to the work being done in open vessels there was great danger of fire and serious accidents; (2) the loss of solvent was not less than ten per cent with each treatment; (3) for the purpose of entirely getting rid of the solvent, a considerable raising of temperature was necessary, and in doing this the nature of the perfume was sensibly altered.



Naudin's Apparatus for Extracting Essential Oils.

Mr. Naudin has been engaged for four years upon the study of this question, and has contrived an apparatus by which he seeks to avoid the above mentioned causes of failure. This apparatus is based on the distillation of volatile solvents in closed vessels in a vacuum, and at a very low temperature.

The flowers, leaves, etc., are introduced into the digester, A, confined in the basket, U. The vessel is closed, and a vacuum, obtained by opening the tap, *t*, causes a suitable quantity of the solvent to ascend from the receiver, R, by the tube, *n n'*. The materials having been left to digest for about fifteen minutes, the solvent liquid, charged with the perfume, is passed from A into B (in which a vacuum has previously been made), by means of the tube G, H. The water contained in the flowers is carried over mechanically by the solvent, and accumulates at the bottom of the vessel B, whence it is drawn by means of the tube, I. A glass window (E) allows the separation of the distinct liquid layers. Communication being established between the evaporator, C, and the refrigerator, F, a vacuum is established by means of the tube, *t''*; the solvent charged with perfume and free from water is then allowed to run from the vessel, B, into the evaporator, C. Communication between B and C is then closed, and the refrigerator, F, is energetically cooled, after which the pump, P, is put into operation. The vapors of the solvent are drawn from C, and forced into F, where they are rapidly condensed. During the distillation, the vessel C is kept at the temperature of the surrounding air by passing between its double walls a current of water. When a very energetic source of cold is to be had, the employment of the pump, as a means for liquefaction, may be dispensed with, and in this case the vaporized solvent passes directly from C to F. After complete evaporation, a white or colored residue is found on the sides of the vessel C, which may be solid, liquid, oily, or semi-fluid substance, eventually becoming solid. When the distillation is finished, the liquid condensed in F is allowed to run into the receiver R. If a sufficiently low temperature has been maintained, this condensed liquid will not be tainted with any odor, and may be used in the manufacture of different perfumes. The perfumes, mixed with the wax of the flowers and leaves, dissolved also by the solvent used, requires to be separated. For this purpose a given quantity of alcohol is drawn into C from the vessel S, by means of a vacuum, and is left there for some time to digest. Solution is favored by admitting air through K, which causes violent agitation of the contents of the vessel. The liquid is then drawn off into S', which is kept at a temperature of $-10°$, in order to precipitate the wax, while the perfume remains dissolved in the alcohol, and the whole is filtered at the same low temperature. The perfume, thus prepared, consists of an alcoholic solution.

In the manufacture of perfumed oils or fats, this manipulation with alcohol is not necessary; the perfume, mixed with its natural wax, is dissolved in the oil or lard. The exhausted flowers in the digester, A, mechanically retain some of the solvent, and to recover this the mass is heated by introducing steam into the outer jacket, and the solvent

is condensed in a special refrigerator. The employment of a vacuum allows the whole of the solvent to be recovered.

It will be seen from the foregoing description that the movement of the liquids from one vessel to another is effected simply by differences of pressure, and that the volatile liquid circulates in closed vessels, in a vacuum, without ever coming into contact with the outer air. The other advantages are that there is no danger from fire; the perfume is completely and quickly extracted, however instable it may be; solution is effected in a few hours in an appropriate menstruum (alcohol, oil, grease, or glycerin); pure perfumes, containing all the aroma, are obtained, owing to the low temperature maintained during the extraction; the perfumes are condensed in an exceedingly small volume, and in a form which allows them to be kept for an indefinite period; the greater value of the yield from all the perfumes than in the old method; and the use of extremely volatile liquids, amongst which the following have been tried:

	Boiling point.
Hydride of butyl	0°
" " amyl	30°
Chloride of ethyl	9°
" " methyl	23°
Light petroleum spirit.	

The choice of a solvent for a particular perfume is not without importance, the delicacy and sweetness of a perfume depending upon the nature and purity of the solvent. This method yields extremely delicate results, and in operating with care the slightest variation in nature may be reproduced with extraordinary fidelity.

Commaille reports that the separation of the odor of the milk of the cow has enabled Millon, as well as himself, to recognize certain plants eaten by these animals, the *Smyrnium Olusatrum* amongst others. M. Naudin has made a series of experiments which show what accuracy can be obtained in this direction. By using a mixture of hydride of butyl and amyl as a solvent, he has been able to distinguish clearly and isolate the perfume of roasted coffee from different sources. He obtained a similar result with the fine shades of quality in tea. He also gives instances of isolating and fixing different special odors, as toasted bread, the human skin, raw or cooked food, earths, etc.

The time of collection of the flower is very important. Each flower must be gathered at an appropriate time of the day, and in a certain degree of bloom which experience alone can recognize. Thus the pink only yields its perfume when collected two or three hours after being exposed to sunlight. On the contrary, roses must be gathered in the morning as soon as they are well open. The flower of the jasmine ought to be picked a few minutes after the first exposure to sunlight. The false acacia always gives a fragrant perfume, but differing according as the flower is gathered in the morning, in the evening, or even in the middle of the day.

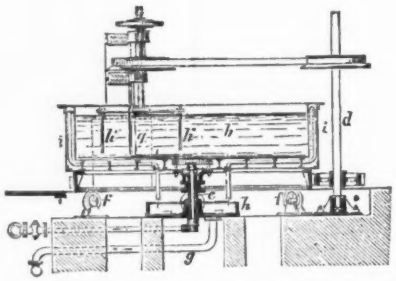
In distillation, as Millon has already remarked, all the modifications of the flower are mixed in one and the same essence, which does not resemble any of them exactly; but probably the mixture corrects, up to a certain point, the defective parts of the collection. In the new mode of extraction, the slightest alteration, the least variation in the state or quality of the flowers, is revealed in a perfume; to obtain, therefore, a perfume possessing all the freshness and fragrancy of the flowers, it is necessary that the flowers used be fresh and fragrant.

The perfumes obtained by the solvent method, instead of dissipating like ordinary essences, are marked by a great permanence. In fact, perfumes become altered by contact with other principles of the plant, which involve them in their own decomposition; but when once isolated from the destructible organs of the plant, the perfumes escape their influence, and obey their own laws of transformation or decomposition.

Millon states that he has kept isolated perfumes for several years in open capsules or tubes without finding any sensible loss. M. Naudin also has experimented on perfumes that have been in his possession four years. The experiments were at first limited to flowers gathered under the climate of Paris, such as the pink, narcissus, violet, rose, lilac, hyacinth, the lily of the valley, etc.; but have since been extended to the flowers of Cannes, such as the orange, rose, jasmin, false acacia, and tuberose. All the perfumes obtained from these flowers have remained unaltered even in contact with air.

As already stated, the perfume, although it remains unaltered in the presence of the oxygen of the air, becomes involved in the general decomposition if left in the presence of the decaying organism of the flower from which it was derived. Now, the decomposition of certain flowers when plucked from the plant is extremely rapid; it is therefore obvious that when the apparatus for extraction is at a distance from the place of collection, the perfume obtained does not exactly resemble that of the flower, even when extracted by the solvent method. Thus, it is known that the essence of neroli manufactured at Cannes, the centre of floral cultivation in the Alpes-Maritimes, is superior to that made at Grasse, about ten miles distant. The reason is that some time is necessarily lost between the moment of gathering and the time of manipulation; besides this, there is the transport of flowers in the hottest days of summer, the effect of which is manifest in the diminution of the yield.

The above inconvenience can be met by keeping the fresh flowers in a special vessel, void of air and full of vapor of the solvent, as of ether. The presence of the latter body and the absence of oxygen prevent fermentation, especially if the temperature be kept sufficiently low. The perfume of the orange has thus been kept in its intensity with the flower itself for a month. A manufacturer could thus preserve his materials from fermentation upon the days when the great abundance of flowers—sometimes 20,000 to 30,000 kilograms—would render his digesters of insufficient size to treat the whole at the same time.



Apparatus for Producing Small Crystals by Refrigeration and Cooling of the Mother-solution.

A DOUBLE-WALLED tank or vat *b* is so constructed that it can be rotated about a central axis *e*. It is provided with an eccentrically attached stirring-apparatus *k*, and immovable scrapers *q*, which prevent the adhesion of the crystalline flour to the bottom or walls of the vat, The stirring apparatus receives its motion from the same transmission *d*, which also rotates the vat. The latter rests upon small rollers *f*, which cause it to have a constant, moderate vibration, and thereby help to produce a finely-granular mass of crystals. Through the hollow axis *e*, cold water enters between the double walls of the vat, the excess of which escapes through *i* into a reservoir surrounding the vat, and from there flows off through *g*.—*Germ. Patent* 20,983 (February 3d, 1882).

Duquesnel's Aconitine.

In view of the increased attention which physicians and pharmacists have lately been directing to the variation in strength of the different commercial aconitines, it will be of interest to describe the mode of preparation followed by Duquesnel, the discoverer of a crystalline principle in aconite, which he calls "*crystallized aconitine*," the adjective "crystallized" being an important and integral part of the title. This particular kind of aconitine, namely, that prepared by Duquesnel, or in accordance with his directions, is the *most powerful* principle so far extracted from aconite, and must be used with great caution. On the other hand, it has this advantage, that it may be relied upon as uniform, so that the exact dose can always be nicely adjusted, a feature which is of special importance in the case of so powerful a drug as aconite.

In a work just published by Dr. J. V. Laborde and H. Duquesnel on aconite and aconitine,* the mode of preparation is given as follows:

Take of

Aconite root	100 parts.
Tartaric acid, in powder	1 part.
Alcohol, ninety per cent	q. s.
Bicarbonate of potassium, in powder	q. s.
Ether, rectified and well washed	q. s.

Reduce the aconite root (from Aconitum Napellus)† to a moderately fine powder; mix this with the tartaric acid, and extract by three successive portions of alcohol, each portion being allowed to remain in contact with the powder for three days, and being then expressed. [The author does not say how much alcohol he uses, but we should suppose that about one hundred and fifty parts would be sufficient each time.] Unite and filter the liquids; then distil them slowly in a water-bath, so as to remove all the alcohol, taking care, however, that the temperature be kept as low as possible, and that the access of air be prevented. Now add distilled water to the extract thus prepared until it ceases to produce a precipitate. Finally, remove the fatty and resinous matters which have (almost wholly) separated. The filtered aqueous solution now contains the alkaloids of aconite in the state of acid tartrate.

This acid aqueous solution is now shaken several times, and in several portions, if necessary, with washed ether (five to six volumes of ether to one volume of liquid) in order to deprive it of the coloring matters, of an organic acid which appears to be uncrystallizable, of a crystalline insoluble‡ matter which may be obtained white, and, finally, of the free tartaric acid, while the tartrate of the alkaloid remains in the liquid. The bicarbonate of potassium is now added, *in slight excess*, in order to decompose the tartrate and set the alkaloids free. When carbonic acid gas ceases to be disengaged, the liquid is again four or five times (and in several portions, if necessary) shaken with ether. This takes up *all* the *active* principles; for, though the remaining liquids are still precipitated by alkaloidal reagents (double iodide of mercury and potassium), yet when they are injected into animals, they fail to produce any notable effects even in large doses.

The ethereal liquids are now distilled, and the last portions of ether allowed to evaporate by exposure to air, a little petroleum ether (sp. gr. 0.600 to 0.650) having previously been added. This will cause the formation of crystals mixed with a small quantity of an amorphous substance and with coloring matter.

Instead of distilling the ethereal liquids, which is always a delicate operation, Laborde and Duquesnel have for a long time employed a little artifice which permits the alkaloids to be at once obtained in the state of salts. They simply stir the ethereal liquid with a glass-rod, moistened with nitric acid, until a white cloud, due to the formation of a nitrate, no longer makes its appearance. On waiting a few moments, these micro-crystalline salts settle down, mixed with a small quantity of a colored liquid.

A long-continued practice, however, has led the authors to the adoption of an *important modification*, which enabled them easily to separate the substances accompanying the true "crystallized aconitine."

Instead of distilling the ethereal liquids, the latter are shaken with a ten-per-cent solution of hydrochloric acid, which takes up the alkaloids, leaving the ether free and available for the next operation. After four of five successive agitations, the ethereal liquid may be considered sufficiently exhausted, as was proved by physiological experiments. The hydrochloric liquids are saturated by chalk, in order to avoid the prolonged and injurious action of the acids upon the principal alkaloid, the crystallized aconitine. Next they are evaporated at a gentle heat (from twenty-five kilograms of root, the liquid amounted to three hundred cubic centimeters), filtered, and while they are still warm, mixed with a solution of *nitrate of sodium* (containing two parts of the salt in three parts of water) of the same temperature, about 45° C.

The whole is allowed to cool slowly during several hours, and, at the end of this period, the bottom of the vessel will be found incrusted with numerous and voluminous crystals. After several days' rest, during which the crystals increase very slightly in quantity, the liquid is filtered off.

This filtrate now contains only traces of the crystallized alkaloid, but it contains other principles which may be separated as follows:

The filtrate is treated with ammonia in a very slight excess; this produces a flocculent precipitate, which is *insoluble* in water, and causes tingling of the fauces, like aconitine.

The precipitate is separated by filtration, and the filtrate evaporated, after having been treated with tartaric acid in very slight excess. Whenever the nitrate of sodium, which is present in very large quantity, begins to crystallize out, the whole is allowed to cool, and a *very small* excess of ammonia is added. This causes a new and abundant precipitate which, on being stirred, coalesces to a resinous, brownish mass, *soluble in water*, and possessing a bitter taste, but without causing tingling like aconitine.

By a renewed concentration and similar treatment, further quantities of this water-soluble substance may be obtained.

According to Laborde and Duquesnel, therefore, aconite root (besides other less important constituents), contains the following:

a. A crystalline alkaloid, about 1.50 grams per kilogram of root, but liable to vary from 0.50 to 4 grams, according to the roots.

b. An amorphous, insoluble substance, weighing only a few grams, and producing tingling of the fauces like aconitine.

c. An amorphous, soluble substance, weighing about fifteen grams, of a bitter taste.

Now, while these two last-named principles are quite inferior to real aconitine, they are nevertheless of interest. They possess special therapeutic properties, differing in degree (and possibly in kind) from aconitine, and undoubtedly modifying the properties of the latter when mixed therewith. The precipitate (*b*) produced by slightly supersaturating the first mother-water with ammonia, and subsequently treated with water acidulated with nitric acid, yields, on evaporating this acidulous solution, numerous crystals of nitrate of aconitine similar to those which are produced by nitrate of sodium; afterwards, there is separated an uncrystallizable salt much more soluble, having the same taste, and precipitated by ammonia even from a dilute solution. This precipitate, thus produced by ammonia, is amorphous, refusing to crystallize in the ordinary solvents of aconitine, and insoluble in water. Its taste is that of the crystallized aconitine, of which it always

* *Laborde* (Dr. J. V.) *et Duquesnel* (H.). Des Aconits et de l'Aconitine. Histoire naturelle, Chimie et Pharmacologie, Physiologie et Toxicologie, Thérapeutique. (Illustrated.) 8vo, Paris, 1883. 15 *fr.*

† The authors state that they generally employ the root of an *Aconitum Napellus* from the mountains of the Royanais in the Dauphiné.

‡ The original has: L'éther enlève en outre . . . une matière cristalline insoluble et qu'on peut obtenir blanche. . . .

retains traces. This substance has already been isolated by other, though by less simple means; Laborde and Duquesnel propose to name it "amorphous aconitine."

In fact, it has been observed that most plants which contain alkaloids, or active *crystallizable* principles, contain, besides these, certain amorphous principles more or less resembling the former. Examples are digitalis and cinchona. [The authors add, that they are at present in regular receipt of aconite roots of known age from Switzerland, and that they are engaged with a series of experiments, to be continued as long as practicable, with a view to ascertain the relative proportion of alkaloids in the root at different periods of its age.]

The amorphous soluble substance (*c*), which is obtained in form of glassy scales, does not appear to be of much importance, at least therapeutically. The authors consider it to be identical with the alkaloid napelline heretofore observed by others.

The principal alkaloid obtained by the authors is the above mentioned "crystallized aconitine," which is, however, in the form of nitrate when extracted by the method before described. The alkaloid itself is obtained by mixing the nitrate with bicarbonate of potassium or ammonium in very slight excess, and agitating for some time with chloroform. The latter is decanted, filtered, and distilled off, when a syrupy liquid will be left behind which soon crystallizes. The crystallization may be hastened if about an equal volume of alcohol be added to the mass (syrupy liquid, or previous to distillation?).

The employment of nitrate of sodium, in the process above described, is one of the most important improvements, since it does away with the use of nitric acid, which alway results in turning the color of the product and possibly alters its constitution.

The authors add that this method of preparing aconitine is only successful in the case of those aconites which furnish *crystallizable* nitrates, such as *Aconitum Napellus*, *A. neomontanum*, *A. pyrenaicum*, etc. It cannot be advantageously employed for *Aconitum ferox*, the alkaloidal salts of which are not crystallizable, nor for *A. Anthora*, from which the authors have been unable to obtain any other but amorphous substances.

Comparative Strength of the Tinctures of Aconite.

THE writer of a recent article in the *Medical Times*, of New York, states that whereas it is not intended to be inferred that the aconitia strength of a tincture of aconite is a true test of its comparative value as a medicine, undoubtedly, if the right menstruum is used for their extraction, the same percentage of all the other active principles of the part used will be dissolved.

The tinctures examined were those of the U. S. Pharmacopœia (procured from a druggist well known throughout the country for his reliability); a tincture of the green root, and one of the green plant, the last two imported, and obtained from one of the best-known dealers in New York. One pint of each was used. Each was acidulated with sulphuric acid and evaporated, at a temperature not greater than 100° Fah., to four fluid ounces. This was then shaken with ether, to separate the green oil. After the removal of the oil as nearly as possible by means of a siphon, the remainder was evaporated, with the same care, to a syrupy consistence. This residue was again agitated with ether and the oil entirely removed; warmed until all traces of ether were expelled, and then mixed with a small quantity of distilled water. To this mixture was added carbonate of magnesia to slight excess to precipitate the aconitia. After standing in this shape for three or four hours, this was shaken with several times its bulk of ether, again set aside, the ether decanted, the remainder shaken again with ether, and the two solutions mixed and evaporated spontaneously. The residue was impure aconitia. This was again mixed with water and dilute sulphuric acid added gradually until solution was effected. This solution was carefully saturated with ammonia water, and the precipitate formed was carefully washed with distilled water, dried, and weighed. The weight of the products was as follows:

From the green plant.....	1½ grains.
From the green root.....	6½ "
From the powdered root (officinal)...	11¼ "

In order to calculate the strength of the tincture made from the green plant in comparison with the officinal tincture, allowance must be made for the moisture in the plant. The herb loses in drying seventy-five per cent of moisture, so that, if all the juices were collected under the most favorable circumstances, it would represent one-third of its weight of dried drug; this diluted with an equal bulk of alcohol would reduce its strength to one-sixth its weight of powdered drug; and this is the real strength of the tincture, about two and one-half ounces to the pint. The tincture of the green root, according to a similar estimate, is about one and one-half ounces to the pint. So we have:

Tinct. aconite root U. S. P....	6	oz. to	1	pint.
" " green herb.....	2½	"	"	"
" " root... ...	1½	"	"	"

This would be the exact comparative strength of the three preparations if the herb and root were equally rich in aconitia, but the analysis shows that one pint of tincture of aconite, U. S. P., yielded 11½ grains of aconita, while the tincture from the green root only yielded 6½ grains, and from the herb was obtained 1½ grains, so that the officinal tincture is nearly twice as strong as that made from the green root, and over seven times as strong as the green herb tincture. The result tends to prove that the active principles of the same plants can generally be more easily and more thoroughly dissolved by the right solvent from the green plant than from the dried plant, for if we obtain 6½ grains from the equivalent of 1½ ounces of the dried root from the green root and only 11¼ grains from 6 ounces of the root where dried, it shows over twice the yield in favor of the green root process; which shows that a good specimen of aconite root contains about nine-tenths per cent of aconitia and that less than four-tenths per cent are dissolved out by the U. S. P. process for making the tincture.

This also proves that it is practical, with small expense, to manufacture tincture of aconite root of a regularly uniform strength and remedy the fault which is often found with its want of effect on the patient.*

If tincture of aconite were used for the effect of aconitia alone, then a solution of the alkaloid would be all that is necessary, but the difference in effect between aconitia and tincture of aconite root proves the value of other principles of aconite,† and if aconitia is more thoroughly separated from the green root, the other principles would also be better separated,‡ and the inference would be a better preparation for internal uses; of course, for external uses, the stronger the tincture the better.

Poisonous Principle of Edible Mushrooms.

BY G. DUPETIT.

THE author finds that all mushrooms contain a poisonous substance when uncooked. The fresh sap of the *Boletus edulis* administered to rabbits, guinea pigs, and rats, by subcutaneous injection, caused their death. The sap of *Amanita cæsarea*, *Amanita vaginata*, *Amanita rubescens*, *Agaricus campestris*, etc., has a similar action.

The sap of *Amanita rubescens* is poisonous to frogs, whilst that or the others is not. The poisonous action is due to something in solution, and not to extraneous microbes, as sterilization, by means of a Pasteur's filter, does not render the liquids innocuous. The active principle is insoluble in ether, chloroform, alcohol, etc., and is precipitated from the sap by the addition of alcohol, tannin, etc. It thus resembles the soluble ferments, and not the known alkaloids. A temperature of 100° renders all these mushrooms innocuous. The author has also obtained two alkaloids, apparently neurine and ptomaine.—*Comp. Rend.*, 95, 1367.

* [This would presume a uniform proportion of moisture in the fresh plant, which is by no means likely to be the case.—ED. N. R.]

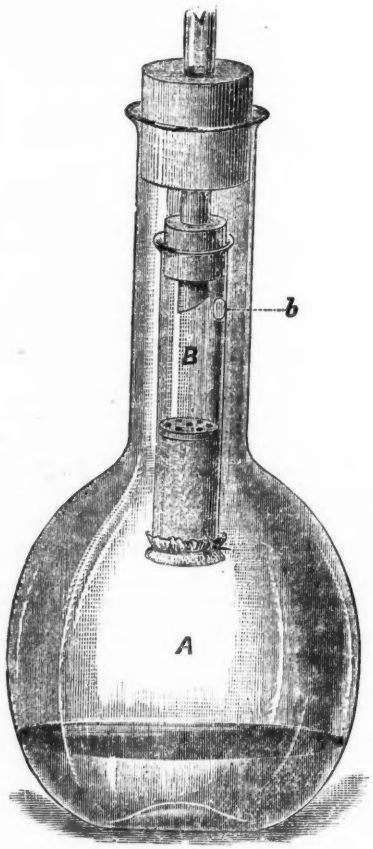
† On this point, and on the best method of separating aconitine, see paper on "Duquesnel's Aconitine," page 265.—ED. N. R.

‡ [*Possibly.*—ED. N. R.]

Note on a New Form of Ether Apparatus.

BY J. WEST-KNIGHTS, F.I.C., F.C.S.

VARIOUS forms of apparatus have from time to time been devised for the extraction of fat from the natural products in which it occurs, by means of ether or some other volatile solvent, all of which are similar in principle, although they differ in form. The best known of these is perhaps the one known as Soxhlet's tube, in which the solvent is passed through the substance to be extracted, and received in a flask, from which it is distilled by heat, and condensed in a reflux condenser, and returned to the tube containing the substance. The form I have used is similar in principle, but is, I think, in many ways to be preferred. In the accompanying sketch, A is an ordinary flask, connected by means of a cork with the tube of an upright condenser; B is a percolator made by cutting off the bottom of a suitable sized test-tube, and blowing a hole *b* in the side about fifteen *mm.* from the top, and is attached to the condenser tube *inside the flask*. The bottom of the percolator is tied over with a piece of fine cambric, the substance to be extracted is then put in, and covered with a piece of filter paper or glass wool, and lastly with a perforated metal disc about two *mm.* thick. Ether is placed in the flask and boiled, its vapor escapes by the aperture *b* up the condenser tube, and after condensation it falls into the percolator B, percolating through the substance back into the flask, the process being continuous.



West-Knight's Ether Apparatus.

The advantages of this apparatus are: the percolator being inside the flask is kept hot, *i. e.*, the same temperature as the boiling ether.

The tube when detached being perfectly open at both ends, there is no difficulty in placing and removing the substance; to remove the extracted substance, it is merely necessary to take off the cambric, and gently push it through from the other end.

And for the same reason, as the substance can be tightly and evenly packed in the tube, there is no fear of the ether passing through in channels.

And lastly, the process is continuous, instead of intermittent, as in Soxhlet's tube, the result of which is that perfect extraction can be obtained in a shorter time.

I have found this apparatus to work well with coarse fibrous substances, such as oil cakes; finer powders, such cocoa, do not allow the ether to pass quickly, and a much greater length of time is required.

It is obvious that the apparatus could be used for other purposes than the extraction of fat, *e. g.*, for the extraction of alkaloids from bark by means of alcohol, etc.

In the discussion which ensued, Mr. Hehner said that it was difficult to make any observations on any new form of ether apparatus, seeing that during the last few years at least one hundred different forms had been proposed. He himself was perfectly satisfied with the Soxhlet tube, the advantages of which were that it worked without any attention being given to it, and that a whole milk dish could be put into it.

Mr. Harland said that the apparatus was more applicable to the extraction of substances which required a solvent of high boiling point, such as bisulphide of carbon. The fact of the hot ether coming in contact with the fat took it out in a much less space of time by mere soakage, than it did in the other apparatus referred to.

Mr. Dyer said he had a good deal to do with determining oil in oil cakes, and the apparatus which he used was the old-fashioned one employed by Dr. Voelker, which he described, and with which three or four extractions could be done easily in half an hour. It was the same apparatus which Dr. Voelker used many years ago.

Mr. Kingzett said he had never used any other form of apparatus than that; it worked perfectly, and a better apparatus for oil-cakes could not be desired.—*The Analyst*, 1883, 65.

Further Notes on Kairine.

ACCORDING to Dr. Riess, who read a report on kairine before the Berlin Medical Society, on June 20th, it would appear that practical medicine is not likely to be very greatly benefited by the new remedy. Dr. Riess found that one claim at least, made for the drug, was amply confirmed, namely, that its administration is unaccompanied by any disagreeable symptoms, such as headache, etc. But the effect of the doses is only brief, and hence it was necessary to administer a good many doses in the methodical treatment of typhoid fever or pneumonia—at least 1 grm. at a time, if the temperature was over 39° C. (102.2° F.) or ½ grm. if it was over 38° C. (100.4° F.). It was necessary to exhibit the remedy almost hourly, so that the daily dose amounted to 8 to 11 grms., administered in twenty to twenty-two portions. Within six days one typhus patient received 50 grms., and another 110 grms. of kairine. In the latter case, Dr. Riess cautiously increased the dose to 2 grms. each time, which produced a remarkable fall of temperature to near 37° C. (96.8° F.), lasting from five to seven hours.

If further observation should demonstrate that kairine can be used for the systematic treatment of febrile diseases, it would certainly belong to the best antipyretics. But Dr. Riess does not consider it to be superior to quinine or salicylic acid. In cases of intermittent fever, kairine shortened the attacks a little, but did not prevent their recurrence.—*Pharm. Zeit.*, No. 57.

Thiophen: A new Substance closely resembling Benzol discovered in Coal Tar.

IT has long been observed that benzol prepared from coal-tar, when treated with isatin and sulphuric acid, yields a magnificent blue coloring matter. Artificial benzol, however, prepared from benzoic acid, or from urine, or from toluol, fails to give this reaction. This peculiar behavior led Victor Meyer to suspect that the coal-tar benzol is accompanied by a substance so closely allied to it in boiling point and other physical properties that it has hitherto escaped notice. As it was also known that coal-tar benzol was rendered brown by sulphuric acid, and thereby rendered "inactive," so as no longer to produce the blue coloring matter (indophenin), a process was devised which was carried out on a large scale in the aniline works of Bindschedler, Busch & Co.

250 liters of the purest commercial (coal-tar) benzol was shaken during four hours with 25 liters of concentrated sulphuric acid, the resulting black-colored acid layer removed, diluted with water and converted into a lead-salt. The latter was decomposed by heating with concentrated hydrochloric acid, or by the dry distillation of the lead-salt mixed with chloride of ammonium. The distillate having been purified with water and strong solution of potash, then dehydrated with chloride of calcium, finally yielded a fresh distillate containing about 70 per cent of the new substance mixed with about 30 per cent of benzol. The separation of these constituents is somewhat difficult and tedious [we have to refer the reader to the original paper for the details]; but there is finally obtained a new body, containing sulphur, having the composition C_4H_4S,* to which Meyer has given the name *thiophen*. It is a colorless, clear, very mobile oil, boiling at 84° C. (corrected), not miscible with water, and having the spec. gr. 1.062 at 23° C. (compared with water at same temperature). It exists in commercial benzol perhaps to the amount of 0.5 per cent. †—*Ber. d. Deutsch. Chem. Ges.*, 1883, 1465.

On the Reddening of Pure Carbolic Acid.

MR. W. MEYKE, of Warsaw, has lately published an interesting paper, giving the results of his experiments made during the years 1879 and 1880, with a view to discover the cause of the reddening of carbolic acid. We give the substance of the paper in abstract.

Led by the observation that the reddening always begins from the inner walls of the glass, and by the fact that pure, white acid kept in tinned vessels does not become colored [according to our observation, it does sometimes?—ED. N. R.], he concluded that the reddening was possibly due to the condition or nature of the containing vessel. To decide this, he made the following experiments:

1. About 50 *cc.* of a reddened, crystallized, pure carbolic acid were distilled. The distillate left no residue on evaporation, but the portion remaining in the retort did, and the final residue was found to be lead, silica, with traces of iron, calcium and sodium, all of which were constituents of the glass.

2. To obviate the objection that the reddened acid might have taken up the mineral constituents from the retort during the distillation, another portion of the original was evaporated and incinerated in a platinum crucible, when the residue was found to contain the same ingredients.

The author was now inclined to believe that the lead (or rather the silicate of lead) was the immediate cause of the reddening. He therefore prepared

3. A liquid containing both lead and silica in a soluble form, by boiling oxide of lead and silica with concentrated solution of potash. Equal volumes of this solution and of carbolic acid which had remained colorless for eight or nine months, were mixed, and a reddening was observed already after three days, deepening to the ordinary dark tint on the sixth day.

4. A sample of carbolic acid which had remained colorless for eight or nine months, was brought into a glass in which another sample of white acid had become red inside of a few weeks, assumed a yellowish tint in two weeks, which gradually turned reddish. Before the test acid was poured in the vessel, the latter was washed out with alcohol and water.

5. A fragment of the glass vessel used in experiment 4 was reduced to fine powder in an agate mortar, and mixed with some pure, redistilled carbolic acid contained in a tin vessel. After a week the carbolic acid had a red color.

6. This experiment was made to ascertain whether glass dissolves in the acid in a comparatively short time. While a portion of the pure acid, evaporated by itself, left no residue, another portion, boiled with glass-powder, was found to have taken up some of the latter.

7. If lead was really the cause of the change, then this metal must be present in the substance of any containing vessel in which the acid changes color. Two such vessels were analyzed, and were actually found to contain lead; two others, in which the acid had not changed color, were found free of lead, but contained some copper.

8. To ascertain whether the change was not due to the action of air, an acid which had remained colorless, in a vessel, for over a year, was poured in a tin vessel, and the latter set aside so as to be protected from dust. In four weeks it had become almost completely liquid, but had not acquired any tint.

The author very honestly says: "Unless chance has played a rôle in these experiments, my theory that the reddening of pure, white, crystallized carbolic acid is due to the lead in the glass vessels is confirmed."

After the author had concluded his experiments, he learned from a remark of Hager (*Pharm. Centralh.*, March, 1880), that Finzelberg had thrown out the suggestion that the reddening of the acid depended upon the composition of the glass of the containing vessels. But no experiments were made to prove this.

It had been asserted by Hager that the presence of nitrite of ammonium in the atmosphere was the cause of the change. The author repeated Hager's experiments, and obtained results entirely different from those obtained by the latter.—After *Pharm. Zeitsch. f. Russland*, No. 27.

Minyak Lagam Balsam.

A BALSAM which had been brought from Sumatra under the above name, and which is derived from an unknown plant, has been examined by Hilger (*Arch. d. Pharm.*). It turned out to be derived from probably the same sources which yield the Gurjun balsam, since it is almost identical in composition with the latter.

Preservation and Restoration of Aromatic Waters.

ACCORDING to Percy Wells, aromatic waters, such as aqua rosæ, aqua aurantii florum, etc., which have become deteriorated by age, may be restored to their former freshness by adding a sufficient quantity of permanganate of potassium to impart to them a permanent faintly red tint, and then distilling. It is somewhat surprising that this method should have the effect asserted without affecting the odorous principles themselves, yet the author is positive in his statements. He also adds that the addition of permanganate to the water to be distilled from the fresh plants or flowers permanently prevents the deterioration of the product; and a similar addition to the water used in the redistillation of essential oils is stated to have a like beneficial effect.—*Pharm. Zeit.* fr. *Pharm. Journ.*

*	Found.	Theory, for C_4H_4S.
C	57.07	57.14
H	4.98	4.76
S	38.25	38.10

† It is not unlikely that the substance *ichthyol*, recommended for certain skin diseases, and which is prepared from a bituminous deposit by means of sulphuric acid, will be found to contain some of this new substance. At least this may be suspected from the fact that ichthyol contains a considerable proportion of combined sulphur. —ED. N. R.

Apparatus for Clarifying Liquids.

A VESSEL *a* (Fig. 1) is continuously fed with the liquid to be filtered, by the pipe *v*. Another vessel *b* is inverted over *a*, and, when the air has been evacuated by means of the pipe *c*, the liquid rises in the upper vessel until it reaches the orifice of *e*, when it begins to flow off. It cannot rise high enough to enter the orifice of *e*, because the tube *l*, connected with the siphon externally, regulates the height of the liquid at a point lower than *e*, but somewhat higher than *e*. While the liquid slowly rises in *b*—and the rate of flow may be regulated according to the nature of the liquid—the suspended impurities are gradually deposited in *a*, from where they are drawn off into a filtering box (Fig. 2). This is separated by a cloth *c*, stretched in zig-zag layers, into two separate compartments, one of which retains the solid particles, while the other receives the clear, filtered liquid.—Patent of C. H. Boeckner, of Newcastle on Tyne, England (Germ. Pat., 20,882).

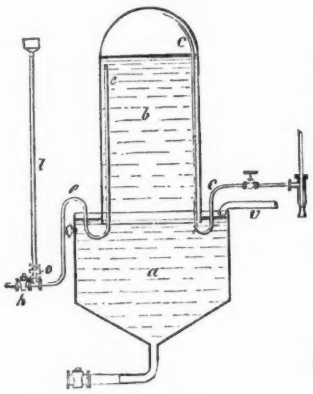


FIG. 1.

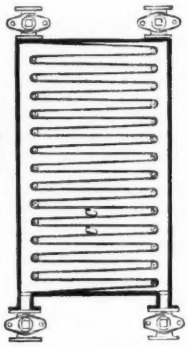


FIG. 2.

The Gelatin Bandage.

IN the treatment of certain skin diseases (such as eczema, psoriasis, etc.), it has been customary to apply remedies which so obscure and cover up the affected parts that no opportunity is afforded to observe the condition of the skin after an interval of time. It is quite well known that the most commonly adopted treatment of the above class of skin diseases is that recommended by Hebra, namely, by means of tar. And there can be no doubt that the antiparasitic and antiseptic properties of tar are highly beneficial in such cases. Still, when a large portion of the skin of the body is involved, the tar-treatment becomes very disagreeable and repulsive. "As one passes through the wards in Vienna (writes Dr. Rob. B. Morison, of Baltimore, in the *Medical Record*, July 28th, 1883, from which we have compiled this abstract), the patients are seen lying upon beds between two blankets which, from the constant use of tar, have become so impregnated with it that the picture is anything but an agreeable one. Add to this the patient himself, covered often with a thin layer of this dirty-looking mass from head to foot, and one realizes that such treatment can only be used as a *dernier ressort*."

Recognizing these drawbacks, Dr. Pick, of Prague, has looked about for a substitute for tar, and has finally devised a treatment which, for simplicity, cleanliness, and beneficial effects, leaves nothing to be desired. [While our main object here is to describe the so-called *gelatin bandage*, the use of which will suggest itself in many cases besides the skin-diseases mentioned above, we will briefly outline the other steps of treatment adopted by Prof. Pick, and decribed by Dr. Morison.] "Instead of the troublesome use of powders and salves which in Vienna must be applied at least twice a day, the patient in Prague has immediately wrapped over his diseased parts linen bandages smeared with unguentum saponis, containing five to ten per cent of salicylic acid. This is applied in any stage of the disease, and left *in situ* for a week."

"The salicylic acid must be thoroughly well mixed with the soap ointment, whilst warm, and this must be spread, when at about the consistence of butter, evenly upon short linen bandages, which should not be more than one and a half inches in width, and even much narrower, when applied to fingers and toes. The ointment should not be in a thicker layer than the back of an ordinary table-knife, and should be spread fresh every time it is used. It is not well to mix too large a quantity of the ointment, as upon standing it hardens and is more difficult of application."

"After the bandages are applied, they are covered with tricot, which is manufactured, in various sizes and at small expense, specially for Prof. Pick in England. A patient thus dressed *is able to go about his work* with no inconvenience to himself, and no injury to his clothes. After a week's time, he appears at the hospital, the bandage is removed, and the disease examined. If it is found necessary, from the still remaining inflammation and induration, a fresh bandage is applied and left on for another week. Then the gelatin is applied in the following manner:

GELATIN BANDAGE.

"A portion of a mass made by dissolving 50 grams of the purest gelatin in 100 grams of distilled water, and which has been allowed to cool previously, is melted by putting it in a cup, and placing the cup in hot water. To this is added the required strength of salicylic acid, usually five per cent. When sufficiently cool, this mixture is painted upon the diseased parts with a painter's brush made of bristles, such as is used in applying tar. The layer of gelatin is made about as thick as a sheet of writing-paper, and, after it has dried, is gently covered with a minimum quantity of glycerin spread on with the hand."

"The use of glycerin is found to be necessary to render the gelatin layer pliable, and to prevent its contracting, which it otherwise would do with considerable force; sufficient to irritate the skin It is also worthy of note that it *is not practicable* to mix the glycerin with the gelatin before it is applied, as it prevents its hardening sufficiently, and renders it sticky. It takes a very small quantity of glycerin only, after the gelatin has dried upon the skin, to render it soft and pliable. A few trials teach the nurse the amount required. This use of glycerin obviates the only bad effect which the gelatin can possibly have. With such a gelatin bandage, a patient seldom feels the slightest itching, the diseased parts are seen through the transparent layer, thus rendering the progress of the disease visible without the removal of the application, and, what is much more agreeable to the patient, an ordinary bath removes all traces of it. So easy is this method of treatment that the patient can make his own applications in most cases."

"In making the gelatin mixture, the gelatin should be dissolved in distilled water and heated in a porcelain capsule. After stirring thoroughly, it is allowed to cool, and forms a cake which takes the form of the capsule. This cake can be kept for any length of time in paper, and the necessary quantity broken off every time it is to be used. The salicylic acid must *be kept separate* from it, and only added to the glycerin when it is melted. The mixture should not be painted upon the skin unevenly or in a thick layer. When properly applied, it can be torn from the skin in quite large pieces, and it comes off without pain to the patient or irritation to the disease. It sounds like the tearing of tissue-paper, and when thus torn off, looks as if the patient was having his epidermis removed by force."

"Any holes or rents in the gelatin covering may be repaired from time to time by a fresh application. The indications for the renewal of the whole covering are when it has worn off, or after a bath."

NOTE OF ED. N. R.—At various times, during the past eleven years, there has been a method for treating *burns* in use in the public hospitals of the city of New York which was originally devised by one of us, and which closely

resembles the above-described glycerin bandage. It is known as:

"GLUE BURN MIXTURE."

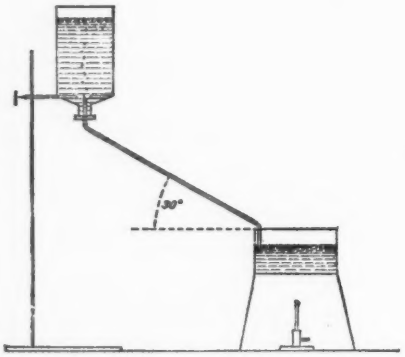
White glue	troy oz. 7½.
Water	fl. oz. 16.
Glycerin	fl. oz. 1.
Carbolic acid	fl. dr. 2.

Soak the glue in the water until it is soft; then heat on a water-bath until melted; add the glycerin and carbolic acid, and continue heating until, in the intervals of stirring, a glossy, strong skin begins to form over the surface. When wanted for use, heat on a water-bath, and apply with a flat brush over the burned part.

We have been in the habit of pouring the melted mass into small delf extract jars, which were covered with paraffin-paper and tin-foil before the lid was put on, and afterwards protected by paper pasted around the edge of the lid. In this manner, the mass may be preserved indefinitely.

The materials for making the gelatin bandage may be kept on hand in the same manner. Each pot may contain a certain weighed quantity of the mass which is stated upon a label to be attached to the pot, and which also specifies the amount of salicylic acid to be weighed out and to be mixed with the mass.

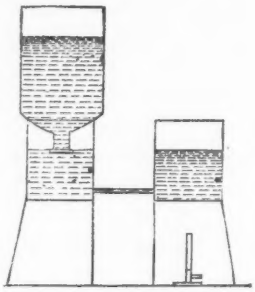
It seems to us that this glycerin bandage will form an an admirable application to burns and scalds, particularly in hospitals where the mixture may be conveniently kept on hand. Its advantages over the uncleanly treatment with carron-oil and other similar applications are such that those who have tried it will always prefer to have recourse to it. In private practice, indeed, it is not often convenient to wait until the mixture can be procured or prepared, and for this reason it has not been much adopted outside of hospitals. But, if the gelatin bandage, as proposed by Prof. Pick, should become—as it deserves to be—a regular article of commercial supply, there will be no difficulty hereafter in obtaining it at a moment's notice.



Pomeroy's Water-Bath.

Constant Water-Baths.

A TUBE of glass or metal, not less than one-quarter of an inch internal diameter, the ends of which are cut off obliquely (this is necessary), is bent as shown in the cut. It should make an angle of about 30°, or a little greater, with the horizon, and the angle may be increased if the bore of the tube is increased. One end is inserted into the water-bath, the other into an inverted bottle. The height of the water in the bath is regulated by the depth of immersion of the tube in it. The boiling is not interrupted by the feeding, which takes place slowly and regularly. The same form of tube answers equally well for keeping a constant level of fluid in a filter or drying chamber. A brass tube is much better than one of glass, as it does not crack at the water level after use for a time. To bend brass tubes, ram them full of sand, stop the ends, and bend over a curved surface.—*Chas. T. Pomeroy.*



Bogardus' Water-Bath.

PROF. PETER T. AUSTEN, of the Chemical Laboratory of Rutgers' College (N. J.), says: We have used for a number of years in this laboratory, a form of constant water-bath which was contrived by Mr. Edward Bogardus, formerly chemist to the New Jersey State Geological Survey. It consists of two tomato cans connected by a tin tube. Into one of the cans a bottle of water is inserted (*e. g.*, a 5 lb. acid bottle), the other can makes the bath. This bath can be left over night without risk, and a number of baths can be similarly fed by connecting them by means of a rubber tube with a single reservoir, made of a fruit can with a number of holes punched near its bottom, perforated corks carrying short pieces of glass tubing being fitted to the holes. A similar contrivance can be used to make the connection with the can serving as the water-bath. Such vents in the reservoir as are not in use can be closed by means of short bits of rubber tubing and pinch-cocks.—*Sci. Amer. Suppl.*

Cellulose as a Dressing.

DR. FISCHER, of Trieste, has made experiments with cellulose as a dressing to wounds, and has found it, when moistened with warm water or some medicated solution, and afterwards covered with an impervious fabric, to be a most excellent application in all cases where heat and moisture appear to be indicated. Its chief advantages are: 1. It is absolutely free from substances capable of exciting putrefaction. 2. It has a very low specific gravity. 3. It produces neither eczema nor erythema upon the epidermis. 4. It retains moisture and heat perfectly for more than twenty-four hours. 5. It never adheres to granulating wounds on the surface of the skin. 6. It adapts itself perfectly to the outline of the place of application. 7. It is much cheaper than other materials heretofore used for similar purposes.

Dr. Fischer has used, so far, only plain water or weak solution of carbolic acid or iodoform in the case of suppurating buboes, and has obtained uniformly satisfactory results.—*Zeitsch. f. Therap.*

The Ether Test for Quinine.

COWNLEY has lately shown (in *Pharm. Journ.*) that the quantity of ether prescribed by the French as well as the British Pharmacopœia for this well-known test is so much in excess that an admixture of sulphate of cinchonidine up to *thirty* per cent may be overlooked. Even Byasson's proportions—0.5 gm. of the sulphate of quinine, 6 *cc.* of ether, and 2 *cc.* of water of ammonia spec. gr. 0.950—fails to discover the presence of *ten* per cent of sulphate of cinchonidine. It is true, the last-named test is much more decisive for the presence of quinidine and cinchonine, but these alkaloids occur much less frequently as impurities than cinchonidine.

On Ergot deprived of Fat.

ONE of the requirements of the new German Pharmacopœia is, that "powdered ergot should not be kept except after being completely exhausted with ether."*

Hirsch, in his excellent "Vergleichende Uebersicht" [see complete title in our June number, p. 179], remarks to this, that ergot thereby loses about one-third of its weight, nearly all of which consists of fatty oil, and that the medicinal effect of the powder is, thereby, increased over that formerly in use, in about the proportion of 2 to 3. This calculation would, indeed, be quite correct, if ether did not remove anything else but fatty oil. But this is not the case, for the oil of ergot, no matter whether obtained by extraction with ether or in any other way, contains a notable proportion of the active constituents of ergot in solution, and has, therefore, a toxic effect. It is well known that in former times the oil of ergot was reputed to be poisonous, and there are yet some authors who consider it so and regard it as the real cause of the well-known chronic ergot-poisoning.†

Probably none of the now living pharmacologists adheres to the opinion, formerly much in vogue, that there is a sharp contrast between the toxic and the medicinal properties of ergot. Even *sclerotic acid*, which is doubtlessly the most important medicinal principle in ergot, possesses toxic and even letal properties. Nevertheless it seems possible, to judge from the experiments made in Paris with Tanret's *ergotinine*, that one or the other basic substanee, existing in ergot, is still more poisonous than sclerotic acid. This ergotinine being soluble in ether, there is a possibility of its being extracted along with the fatty oil during the exhaustion of the ergot, provided its salts, in form of which it is no doubt present in the drug, are likewise soluble in ergot. If this is the case, the toxic effect of the exhausted ergot would naturally be considerably weaker, and for this reason it would seem to be unnecessary to diminish the dose of ergot, when deprived of oil. And that such a reduction in dose is really uncalled for is shown by the fact, that the extracted oil *actually* possesses toxic properties, of such a degree in fact that former experimentors supposed the whole activity of ergot to reside in it.

That the powdered ergot formerly kept in the shops was frequently of inferior quality, cannot be doubted. Its proneness to deterioration is no doubt due to the presence of the oil, as stated above, since Perret has shown that powdered ergot deprived of oil is almost unalterable; at all events, it keeps for several months unchanged.

The exhaustion of ergot by ether is best performed by means of percolation. In drying the exhausted powder, care must be taken to avoid any rise of temperature, since this, particularly in presence of moisture, may cause decomposition of the active principles.

Perret directs the ergot to be first thoroughly dried, which of course causes an additional loss of weight. His process for preparing powdered ergot deprived of oil, is as follows:

The ergot is first dried at 40° C. (104° F.) until it ceases to lose weight. It is then ground and sifted, and the powder once more dried, first at 40° C. (104° F.), then on the water-bath, or at a temperature of 80° C. (176° F.), until the weight remains constant. The powder is then allowed to cool, transferred, when cold, to a percolator, and extracted with ether until a drop of the ethereal percolate ceases to leave a fatty stain on glass. The powder is then pressed, passed through a sieve, and dried a few hours at 35° C. (95° F.), then at 40° C. (104 F.), then at 60° C. (140° F.), 80° C. (176° F.), and finally for a few moments at 100° C. (212° F.). Lastly it is once more passed through a coarser, and when entirely cold through a fine sieve.—After *Pharm. Zeitung*, No. 49.

An Improved Method for Preparing Sclerotic Acid, the Active Principle of Ergot.

SCLEROTIC ACID (Acidum Sclerotinicum), which was first isolated from ergot by Professor Dragendorff and Dr. Podwissotzky, and which constitutes the active ingredient of the drug, has now been in use for about eight years, and though its effects were often found to be feeble, yet it has not been entirely abandoned, it being still considered by the best authorities to be the really valuable constituent. The occasional unsatisfactory action is rather due to the fact that the substance is supplied by manufacturers in an impure condition, deeply colored, and containing variable quantities of water, all of which naturally interfere with its uniform action.

To remove these defects, and to place in the hands of practitioners as uniform a preparation as possible, Dr. Podwissotzky has improved its method of preparation as follows:

400 grams of powdered ergot are heated for three or four hours on a steam-bath with 1 liter of distilled water and 60 gm. of diluted (1 : 7) sulphuric acid, then pressed, and the residue again extracted with 500 *cc.* of distilled water for two hours in the same manner. The liquid is expressed, united with the first, the whole heated to 70° C. (158° F.), and treated with neutral acetate of lead until this ceases to yield a precipitate. This reagent throws down the erythrosclerotin as an insoluble violet lead-compound. (Erythrosclerotin yields precipitates with metals, earths, and alkaline earths; if freed from these substances it is soluble in alcohol with red color. After an extract of ergot has been freed from erythrosclerotin, it no longer gives a precipitate with acetate of lead).

After the liquid, together with the precipitate, has been warmed for one hour more on the water-bath, it is filtered, and the excess of lead removed from the filtrate by hydrosulphuric acid. The sulphide of lead having been separated by filtration, the straw-yellow liquid is evaporated on a water-bath (if at all possible, in a vacuum-apparatus) to a syrupy consistence (to about 150 *cc.*), or better still until a coffee-brown color shows itself at the margin of the residue in the dish. (This is a sign of the *beginning* decomposition of the sclerotic acid; the dark color, when once produced, cannot be removed).

The residue is now briskly stirred up and mixed with 1½ liters of absolute alcohol, whereupon the sclerotic acid will separate in ten or twelve hours. The alcohol is then poured off, another half liter of absolute alcohol poured on, with which the mass is thoroughly kneaded in a mortar. Finally, it is removed and dried over caustic lime and sulphuric acid. By repeated kneading and working with absolute alcohol, the product may be rendered dry enough to be reduced to powder.

* The word "kept" in the above sentence is a verbal translation of the original, from which this article is abstracted. But the word does not correspond with the original text of the new German Pharmacopœia. We have already in our last volume pointed out that the wording of the sentence in question, in the work just cited, is ambiguous and liable to misinterpretation. Besides, it does not satisfy the exigencies of the nature of the drug. As it now stands, "*pulveratum ne adhibeatur nisi æthere prorsus exhaustum*," it can only mean:

"Powdered it shall not be used, except if completely exhausted by ether."

This might admit, for instance, the following interpretation:

"Ergot may be kept in stock in a powdered condition, but before being used for any pharmaceutical or medical purpose, it must be exhausted with ether."

If powdered ergot is permitted to be kept on hand at all, we fail to see what object can be gained by the removal of the oil, after this has done all the damage it can. For it is well known that it is the oil which causes the deterioration of powdered ergot, after becoming rancid.

If ergot, on the other hand, is directed to be kept whole, and to be powdered only a short time previously to being used, we fail to see what is to be gained by the removal of the oil, for in its fresh, unaltered condition it can do no harm, and its removal only complicates the administration.

We would, however, fully approve the criticised paragraph, if it had been worded thus:

"pulveratum ne conservetur (or, seponatur) nisi æthere prorsus exhaustum;" that is: "powdered it shall not be kept (or put in stock) except if completely exhausted by ether."

The author of the above paper (Professor Theodor Husemann), by using the verb "kept" instead of "used," tacitly corrects the expression of the pharmacopœia, and is, therefore, in harmony with our views.—ED. N. R.

† Ergotism, raphania; Kriebel-Krankheit; cripple disease. (The German *Kriebel* = English *cripple*.)

The yield is 12 to 14 gm., and the sclerotic acid thus obtained is best preserved over lime and sulphuric acid. Or, the product may be preserved in absolute alcohol and may also be transported or shipped in the latter.

The product is quite light-colored, not deeper than gum-arabic, but it cannot be obtained entirely free from calcium and potassium salts.

While Bonjean's as well as Wernig's ergotin, when used hypodermically, produce (often?) irritation or inflammation of the connective tissue, the latter does not occur with sclerotic acid. However, a solution of the last-named does not keep long, and to obviate this, some have been in the habit of combining it with salicylic acid. This being, however, but little soluble, and sometimes separating in form of fine needles, which themselves may cause irritation, Dr. Podwissotzky recommends to use thymol-water (1 : 1000) for solution. In this form, the remedy has been used successfully in the Insane Asylum at Dorpat, and is also commonly dispensed by the pharmacists of the city.

When treated with alkalies or alkaline earths, sclerotic acid *loses its effects completely*, a gum-like body being then formed, while ammonia is given off.—Abstract from *Pharm. Zeitsch. f. Russl.*, 1883, 393.

Cold Cream.

Mr. Ad. Vomacka gives the following formula and directions for cold cream, in the *Seifenfabrikant:*

White wax	200 parts.
Spermaceti	500 "
Oil of almonds, expressed	1600 "
Rose water	80 "
Oil of rose, for each 2.4 kilos	30 drops.

Melt the wax and spermaceti at a gentle heat on the water-bath, pour the mass into a very shallow, warmed porcelain dish, and let it stand over night covered with paper. Next morning, begin to work the hardened mass by a gentle, uniform to-and-fro motion of the pestle, which should be held lightly between the fingers without exerting pressure, commencing at the edge, gradually working towards the middle, and mixing the whole thoroughly.

The prescribed amount of rose water is now slowly added, in a thin stream, and while constantly stirring. If desired, 5 grms. of borax may be dissolved in the rose water, which will facilitate the combination. The mortar is now well covered and set aside for one or two days, in order to give the fat a chance to combine with the water. It is then again briskly stirred for a quarter or half an hour, and, finally, the oil of rose is added, previously dissolved in a little castor oil, which latter imparts to the cold cream an extremely handsome dull lustre. . . .

The readiness with which cold cream becomes rancid or acid makes it advisable to add to it some suitable preservative, if it is to be kept for any length of time. A very good method is to add a small quantity of salicylic acid dissolved in rose water or sweet spirit of nitre.

In place of oil of rose, other oils or mixtures of oils may be used, as for instance:

1. Oil of neroli	10 parts.
Oil of rose	5 "
Oil of lemon	15 "
2. Oil of bergamot	9 grms.
Oil of lavender (finest)	3 "
Oil of rose	35 drops.
3. Oil of lemon	5 parts.
Oil of lavender (finest)	5 "
Musk	0.4 "

In the same manner as the above is prepared

Vaseline Cold Cream.

The ingredients for which are as follows:

Spermaceti	150 parts.
Paraffin	150 "
Vaseline, white	1000 "
Rose water	600 "
Oil of rose, to every 2.4 kilos	30 drops.

Oil of Gaultheria or Oil of Birch?

Oil of birch, which has been shown already by Procter, in 1844, to contain salicylic acid, and which is frequently sold, according to Mr. G. W. Kennedy, as a substitute for oil of gaultheria, has been subjected to analysis by Mr. H. P. Pettigrew, which proved the presence of methyl and of salicylic acid. Terpenes were found to be absent.

Freshly distilled oil of birch is a bright and colorless liquid, of considerable refractive power; it possesses a very agreeable and fragrant odor, closely resembling that of gaultheria, although a difference can be perceived when the two oils are compared. With age, the oil acquires a reddish color, of which, however, it is deprived by distillation. It has a spec. grav. of 1.180 at 15° C. (59° F.), and its boiling point is constant at 218° C. (424.4° F.)

It is worthy of note that the spec. grav. of oil of gaultheria, as stated in the U. S. Pharm. (1880) corresponds precisely with that of oil of birch, while the spec. grav. of an authentic specimen of oil of gaultheria in the possession of Prof. Maisch was found to be but 1.0318 at 22° C.

The lower spec. grav. of oil of gaultheria may easily be explained by the presence in the latter of a terpene which is lighter than water.—From *Amer. Journ. Pharm.*, 1883, 385.

Tincture and Solution of Chloride of Iron.

Mr. M. W. Coleman, Ph.G., has found that, by following the process of the U. S. Pharmacopœia of 1880 for Liquor Ferri Chloridi, the resulting product could never be obtained of a greater density than 1.390 (instead of 1.405, as the U. S. Ph. has it), although the acids used were pure and of the proper strength.

On examining the cause of this, it was observed that the admixture with nitric acid was to be performed in a capacious porcelain capsule. If so mixed, a considerable quantity is lost by the energy of the reaction, and the loss materially reduces the specific gravity of the resulting solution. It is probable, says Mr. Coleman, that the experiments incident to the construction of this formula were made in a flask which would prevent the loss of any portion of the liquid.

If this conclusion is correct (and we believe it is), the specific gravity of the officinal solution is undoubtedly wrong.

The U. S. Ph. states that 10 *gm.* of the solution, when completely precipitated by ammonia, yields a precipitate which, when washed, dried, and ignited, should weigh 1.86 *gm.* These directions having been followed precisely with a solntion of lower spec. grav. (1.390) than the officinal, the residue weighed 1.882 *gm.* With the solution of spec. grav. 1.390, the tincture was made according to the officinal formula. The spec. grav. was 0.965, while the officinal is stated to be about 0.980.—After the *Am. Jour. Pharm.*, 1883, 387.

A similar observation, concerning the solution of chloride of iron of the new German Pharmacopœia, has been made by Mr. Th. Wimmel, of Hamburg (*Pharm. Zeit.*, No. 43). The original process directs the solution of the iron to be effected in a flask, while those who have criticised the process have probably used an open capsule. In consequence of this, they found that the quantity of nitric acid prescribed by the formula was insufficient to oxidize the ferrous sòlution, owing to the loss of nitric acid during the reaction. In a narrow-necked vessel, this loss is diminished to a minimum, and no excess of nitric acid need be used.

Treatment of Catarrh.

The following combination is stated by M. P. Vigier to have been used with good success in catarrhal affections:

℞ Picis liquidæ	1.0 gm. = 15 grs.
Benzoini	1.0 " 15 "
Pulv. ipecac et opii	1.0 " 15 "

Mix. Make into ten pills. Take three pills daily between meals.

A New Aspirator.

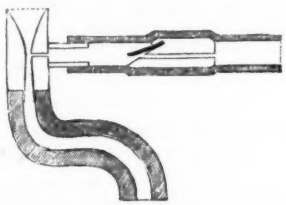
MR. C. L. LAWLOR describes in the *Journal of the Am. Chem. Society* an apparatus capable of giving a high vacuum with a low water-pressure, which is here illustrated.

In the *London Engineer* for 1876, Mr. Bronson has described an aspirator, giving results which are about the same as those obtained with the apparatus which I propose to describe. The only merit claimed for the new aspirator is its greater simplicity.

With the new apparatus a vacuum equal to the barometer vacuum may be obtained, minus the tension of the water vapor corresponding to the temperature of the water used to work the apparatus. This result can be reached with a water-pressure not exceeding 5½ pounds.

Experience has shown that a high vacuum is not necessary for filtration, but for other purposes, such as fractional distillation, a high vacuum is a great help. High water pressure cannot be obtained in many laboratories, especially those situated in the lower part of New York City, and chemists constantly complain that they are unable to secure a vacuum with their filter pumps.

In order to get an aspirator which gives the best results with lowest water pressure, it is simply necessary to adapt a few well-known principles in hydrodynamics to the end in view. A volume of water thirty-four feet high will support a column of mercury thirty inches in height. In order to do the same amount of work with a less "head" of water, a greater volume of the liquid must be employed. As a mass falling from a given height, the mass must be increased, *i. e.*, the mass must be inversely proportionate to the height. We must also consider that



Lawlor's Aspirator.

the form of tube or nozzle which has the greatest co-efficient of discharge must give the best results. This shape, as shown by Venturi, is a tube whose interior presents the appearance of the frustrum of a cone, the sides of which diverge at an angle of five and sixteen one hundredths degrees, and whose length is nine times that of its lesser base. The discharge in this case is 2.5 times greater than through a thin plate, 1.9 times greater than through a short cylindrical tube, and 1.46 times greater than the theoretic discharge (Haswell). The water enters the aspirator through a short funnel, whose sides converge towards the narrow part of the cone. The aspirating hole is at the junction of the cone and funnel, and should not be more than one-third the diameter of the throat of the apparatus. Conical diverging arteries give their best results when submerged, but, as this is not convenient in the case of aspirators, the same end may be attained by attaching to the extremity of the pump a short piece of lead tubing of slightly larger calibre than the discharge, bent at least twice at right angles. The efficiency of this pump is shown by the following comparison with that of Prof. Richard's (*Chem. News*, 1876, p. 141). The barometer standing at 28.8 inches, temperature of water in hydrant 47° Fah.

Water pressure.	New pump.	Richard's pump.
1 pound.	4.8 inches mercury.	1.0 inches mercury.
2 "	10.7 " "	1.6 " "
3 "	17.8 " "	2.3 " "
4 "	24.7 " "	2.8 " "
5 "	29.2 " "	3.4 " "
5½ "	29.4 " "	3.8 " "
25		29.2 " "

No disparagement is intended in this comparison to Prof. Richard's aspirator, which was designed for high pressures, and which works admirably with a pressure of twenty-five pounds. While it was an easy matter to get the necessary data for the construction of the aspirator, it was a matter of no little difficulty to get a workman that would rigidly adhere to these data. Fortunately I found in Mr. Ketchum, 171 Gates avenue, Brooklyn, a person qualified for work. To this gentleman I am also indebted for designing an ingenious and efficient check valve, which is a necessary adjunct to all aspirators which work with water pressure. His method of setting the valve is also very ingenious. A piece of brass rod, one-quarter inch in diameter, and one-quarter inch long, is bared, turned and filed to the shape shown in cut. A small piece of thin sheet rubber, one-sixteenth inch smaller than the face of the valve, is permanently fixed to its seat by a lug in the upper part of the face, this is placed in the end of the piece of rubber tubing which is attached to the aspirating tube, by first introducing a thin metal tube, whose internal diameter is slightly larger than the diameter of the valve.

The latter is then dropped into the tube, and by means of a small rod, pushed into place just beyond the metal tube which is then withdrawn. The rubber tube embraces the valve so securely that it is impossible to displace or disarrange it. This method is superior to the older one of cementing the valve in the aspirating tube. A pump actuated by water pressure has some advantages over the Bunsen pump which are worthy of attention. It is less expensive, less difficult to place in position, the degree of vacuum is easily regulated by turning on just sufficient water to secure the desired result, avoiding pinch-cocks which injure the rubber tubing, it is not liable to freeze, because there is no great length of pipe to be exposed, an attachment for producing a blast can be added with less trouble and expense.*—*Journ. Amer. Chem. Soc.*, v., 71.

Carthamin.

THIS is the beautiful coloring matter obtained from the safflower (Carthamus tinctorius), and is composed of $C_{14}H_{16}O_7$. Cooley gives the following mode of preparation:

Safflower, exhausted by washing it with water (or with water acidulated with acetic acid), is dried, coarsely powdered, digested in a weak solution of carbonate of sodium; pieces of clean white cotton or calico are then immersed in the solution, and acetic acid gradually added in slight excess; the cotton is next washed, dried, and digested in a fresh quantity of dilute solution of carbonate of sodium, and agitation employed until the whole of the color is again dissolved; the new solution is filtered, and slightly supersaturated with citric acid (or acetic acid); the carthamin, which falls down in rich crimson-red flocks, is lastly washed with cold distilled water, and dried.

It forms an amorphous brilliant greenish powder nearly insoluble in water, soluble in alcohol, forming a gorgeous purple solution, and in weak alkaline leys giving an equally beautiful red one.

According to the best authorities, this is the only article which will brighten a lady's complexion without injuring the skin.

To prepare rouge for the skin, to the second alkaline solution mentioned above, a quantity of finely-powdered talc or French chalk, proportionate to the intended quality of the rouge, should be added. Mix well; precipitate with lemon juice, and lastly collect the powder, dry it with great care with as little heat as possible, and triturate it with a very small quantity of oil of sweet almonds to render it smooth and adhesive. In this form it is most applicable for the lips.

When used as a powder, it is reduced with talc to extreme fineness, and is applied by means of a small powder-puff; actresses generally use a hare's foot.—*Druggist.*

* Mr. J. Ketchum, Jr., 171 Gates avenue, Brooklyn, informs us that he is about to put the apparatus on the market. Its price will be in the neighborhood of $3.00.

Determination of the Cinchona Alkaloids.

PROLLIUS shakes up five grams powdered bark with a mixture of thirty-eight parts alcohol, ten parts chloroform, and two parts ammonia in a stoppered flask; decants off the liquid after some hours as clear as possible, and mixes them with five parts finely powdered hydrate of lime, which at once decolorizes the vinous red liquid, whilst the alkaloids remain in solution. The liquid is filtered, weighed, and gradually evaporated, when the quinine remains in a varnish-like state, but the other alkaloids as crystals. The weight of the residue gives the percentage of the bark in alkaloids.

For determining the quinine and the secondary alkaloids soluble in ether, Prollius recommends a mixture of eighty-eight parts ether, four parts ammonia, and eight parts alcohol. Three grams of powdered bark are digested for some hours with thirty grams of this mixture, shaking frequently. After the powder has settled, twenty grams of the solution are decanted off clear, and shaken with five to six drops of dilute sulphuric acid, or so much that it slightly predominates. The alkaloids settle to the bottom of the vessel as an acid, viscid, aqueous solution. The ether is decanted off, and the residue of the alkaloids is removed from it by agitation, first with two grams and then with one gram of ammonia. The united solutions of the latter are heated to expel the alcohol, and are precipitated, whilst warm, in tared capsules with ammonia. The precipitate is deposited in a resinous state, and is easily washed and dried.

According to H. Kissel, the last-described process is especially adapted for the rapid and accurate determination of the cinchona alkaloids, but it shows not merely the quinine and accompanying bases, but the entire alkaloids in the bark. Kissel macerates the bark with the solvent mixture for two hours, evaporates a clear aliquot part of the solution, re-dissolves the residue with a slight excess of dilute sulphuric acid and hot water, filters from the undissolved wax and quinine acid, precipitates when cold with caustic soda, collects on a tared filter, dries at 115°, and weighs.

J. E. de Vrij admits the advantages of the Prollius process, but modifies it by macerating ten grams of very finely powdered bark with two hundred grams of the solvent mixture, shaking up frequently, pours off, and weighs a part of the clear liquid; distils off the ether in a water-bath, and rinses the residue with alcohol into a tared capsule. By drying on the water-bath, we obtain the crude alkaloids. These are purified by solution in dilute hydrochloric acid, filtered, and the filter is washed till the washings are no longer rendered turbid by soda-lye. The filtrate is shaken up with chloroform and soda-lye in a separating funnel provided with a stopper and a flask. After twelve hours, the stratum of chloroform which contains all the alkaloids is drawn off, the chloroform is expelled by evaporation or distillation, the residue is dissolved in alcohol, evaporated in tared capsules, dried, and the pure alkaloids are weighed.

J. Biel macerates twenty grams powdered bark with two hundred grams of the solvent mixture for four hours in a well-closed flask, filters rapidly through a folded filter covered with a glass plate, and decolorizes the solution, if red, with twenty grams of finely-ground hydrate of lime. One hundred grams of the filtrate are evaporated to dryness in a beaker on the water-bath, the residue dissolved with a few drops of sulphuric acid and hot water, cooled, filtered, and the filter washed. The total filtrate (about forty *cc.*) is supersaturated with ammonia in a narrow-stoppered glass, and four times shaken up with chloroform, using twenty *cc.* each time. The chloroform is separated from the aqueous sotution by means of a separating funnel, evaporated in the beaker, the residue dried at 110°, and weighed. For accurate determinations, the alkaloids must be re-dissolved in dilute acetic acid, filtered through a weighed filter, and the residual resin weighed after drying at 110°, and deducted. The process first given by Prollius yields, according to Biel, the alkaloids in a very impure state, and does not even extract their total quantity.—*Zeitschr. f. Anal. Chem.* in *Chem. News*, May 25th.

Analysis of Tannate of Quinine.

IN the course of a paper on the preparation and analysis of tannate of quinine, Mr. Mathias Rosznyay, of Arad (Hungary), makes an important statement regarding the analytical process recommended by many prominent authorities, among them Hager. The latter namely recommend to mix 1 gm. of the tannate of quinine with 10 gms. of finely powdered oxide of lead and water to a paste, which is to be dried and then to be extracted with alcohol, which is supposed to separate the alkaloid, leaving tannate of lead behind. Rosznyay, however, found that the alcohol always extracted the unaltered tannate of quinine. On evaporating the alcohol, the residuary mass was tasteless, and had, in no case, the bitter taste of quinine, which led him to judge that the expected decomposition did not take place. He therefore had recourse to a method based on that which is used for analyzing cinchona barks. A mixture of 2 gms. of tannate of quinine and 6 gms. of fresh hydrate of calcium was made into a thin paste with 10 cubic centimeters of a 25-per-cent solution of caustic soda, and the whole carefully evaporated on the water-bath. The resulting dry mass was powdered, transferred to a small continuous displacement apparatus, and completely exhausted with chloroform, which was judged to be the case when a drop of the percolate no longer left a visible residue after evaporation from a clean glass. The solution was transferred to a carefully tared porcelain capsule, the latter covered with a piece of blotting paper, and set aside so that the latter could evaporate spontaneously. Finally the capsule was heated for some time at a temperature of 40° C. (104° F.) until all the chloroform was dissipated. Lastly, the capsule was weighed with its contents of hydrate of quinine, appearing as a white, resinous substance.—*Gyógyszt. het.* and *Rundschau (Leitmeritz)*.

Correction to the Assay Process of Cinchona in the German Pharmacopœia.

THE process given in the German Pharmacopœia requires that 3 cubic centimeters of normal (volumetric) hydrochloric acid should be added to the 120 grams of liquid poured off in the first step of the process (see NEW REM., 1882, 200). Prof. Flückiger draws attention to the fact that the resulting volume is too small. Either the liquid must be evaporated to dryness and the hydrochlorates of the alkaloids again brought in solution with 30 *cc.* of warm water, or—what is preferable—30 cubic centimeters of one-tenth normal hydrochloric acid are to be used in the beginning and the volume afterward concentrated to 30 *cc.*, when the ether and alcohol is distilled off. Both of the latter must be absent when the caustic potash is added.—*Pharm. Zeit.*, 1882, No. 97.

Syrup of the Phosphate of Lime and Iron.

PREPARE a syrup of lime (or saccharate of calcium) from 8 grms. of calcium hydrate, 16 grms. of sugar, and 40 grms. of water. Filter the syrup, and to 42 grms. of it add 55 *cc.* of water and 345 grms. of phosphoric acid (spec. gr. 1.120), and shake until a clear solution results. Then add 3.25 grms. of carbonate of sodium and 5 grms. of carbonate of potassium dissolved in 10 *cc.* of water, also 35 *cc.* of orange-flower water, and enough distilled water to bring the mixture to 770 *cc.* To 605 *cc.* of this liquid 8 grms. of powdered cochineal are added, and after the requisite amount of coloring matter has been extracted, the liquid is filtered, and 930 grms. of sugar dissolved in it. To the remainder of the phosphate liquid 29.2 grms. of powdered sulphate of iron are added, dissolved by shaking, and the filtered solution added to the saccharine liquid. Finally enough syrup is added to make 1,030 *cc.*—E. SCHÜRER, in *Pharm. Zeit.*

Care of Tooth Brushes.

If dealers will call the attention of customers to the following rules for the use of brushes, so much complaint will not be made about their wearing qualities:

Directions for using tooth brushes.—Tap the brush before using it, to see if you can jerk out any loose bristles.

Tap the brush after using it, to shake out the water, and put it away fairly dry.

Do not keep it closely shut up in a brush tray or dressing-bag bottle.

Cause of complaint.—Loose bristles may be found in a new brush in consequence of the wire having cut the bristles in half while drawing them into the hole, the knot being too full.

Bristles may project beyond the level of the serge, the knot being too slack; clip them off; do not withdraw them, and thereby make the knot still more slack.

Bristles will perish if brushes are put away thoroughly wet, and left for days to get thoroughly dry; after a time, even with the greatest care, this will happen.

Brushes will smell offensively if closely shut up when wet; they will also become discolored.

Tooth brushes will wear out in course of time; some people use them for months, while some will cut them down very quickly, thus:

Teeth with sharp edges cut bristles.

Teeth with irregular spaces will catch individual bristles and forcibly withdraw them.

Some people select a brush too soft for their requirement, and make it harder by pressure, breaking down the bristles, which they would not do if their brush was sufficiently hard.

A tooth brush being an inexpensive article, it is wiser, therefore, to throw it away before it is thoroughly worn out, than to keep it as an annoyance, which it will be if used too long.—*Quinologist.*

To Fasten Labels on Metal.

The following composition is recommended:

Mucilage of tragacant	10 parts.
Honey	10 "
Flour	1 "

Iodoform-Solution for Hypodermic Use.

Mosetig gives the following directions, in the *Zeitschr. f. Therapie* (No. 11), for preparing a solution of iodoform for hypodermic use:

Iodoform	gm.	1.0 =	15 grs.
Benzol	"	3.0	45 "
Vaseline oil	"	15.0	240 "
Oil of gaultheria	gtt.	2	2 gtt.

[We have no practical experience with this mixture, but confess that we would not like to adopt this form of administration without feeling our way cautiously, on account of the possibility of producing abscess.—Ed. N. R.]

Iron Rust Spot Remover.

Cream of tartar	50 parts.
Binoxalate of potassium, powdered	50 "
Oil of rosemary	1 part.

Rub to powder, and mix well. Moisten the spot, place on a heated tin plate, and rub with the moistened powder. —*New Idea.*

Removal of Encaustic Letters.

The signatures, letters, numbers, etc., upon porcelain vessels may be removed, according to E. Weymar, without injury to the glazing, by protracted polishing with a piece of pumice stone moistened with concentrated hydrochloric acid. The removal is facilitated by previously exposing the signatures to the vapors of hydrochloric acid. —*Pharm. Zeit.*

Iodide of Potassium.

Mr. H. P. Reynolds having occasion to examine a number of samples of iodide of potassium, found in this market, found a number of them more or less contaminated with carbonate of potassium, the best of them had one to two and a half per cent of carbonate, besides traces of chloride and iodate. Correspondence with manufacturers elicited somewhat different opinions, but Messrs. Powers & Weightman acknowledged that nearly or quite all the iodide of potassium in the market has a decidedly alkaline reaction. Mr. Reynolds believes that the excess of the carbonate in some samples is so great as to render them chemically, if not therapeutically, objectionable. In attempting to produce a salt which shall not be discolored, owing to the excess of iodine, manufacturers appear (so Mr. Reynolds thinks), to have gone to the other extreme.

If necessary, potassium iodide can be measurably freed from carbonate by solution in distilled water, almost to saturation, and at a low temperature, carefully neutralizing with dilute sulphuric acid, and filtering out the precipitated sulphate of potassium. It would be about as easy, however, to make the iodide extemporaneously.—*Drug. Cir.*

Note on Reinsch's Test.

In testing for arsenic by Reinsch's method, there is a serious source of error which seems to have been overlooked; at least, I can find no reference to it in any of the standard works on the subject. I allude to the deposition of free sulphur, together with cupric sulphide, on the copper, and its sublimation when heated. In examining decomposing organic substances, sulphur is frequently deposited, owing to the decomposition of free sulphuretted hydrogen, so much so, sometimes, as to take fire and burn with a blue flame when a lighted taper is applied to the copper. When heated in a tube, the sulphur forms a sublimate having a general appearance and behavior similar to that of arsenious oxide in small quantity, being white and resubliming unaltered. It is mentioned in some works that sulphur cautiously sublimed condenses in rhombic octahedrons, but I have not found it deposit in that form. Under the microscope, it is seen to consist of globules. When, however, these are so small as to render their outlines indistinct, they resemble closely the crystals of arsenious oxide in transparency, lustre, and aggregation. When doubt exists, the safest course might be to procure as much of the sublimate as possible, boil down a second time with dilute acid and copper, and examine any sublimate obtained microscopically, and with the usual confirmatory tests.—J. Macallan, F.C.S., in *The Analyst*, 1883, 64.

Analysis of an Aqueous Glycerin.

M. Morawski, in *L'Union Pharmaceutique*, gives the following method for estimating the proportion of glycerin in a mixture of glycerin and water. Heat two or three grams of the glycerin with oxide of lead at 130° C. until the weight of the lead oxide does not increase. Multiply the increase of weight of the lead oxide by 1.3429, and it will give the quantity of glycerin in the commercial product. The lead oxide combines with the glycerin, forming a compound $C_3H_8PbO_3$. The error will be within one per cent.

The Picric Acid Test for Glucose.

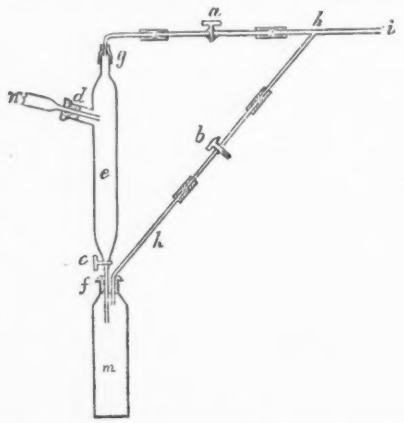
If equal volumes of a solution of potassa and of a concentrated solution of picric acid are mixed, picrate of potassium is precipitated, which, on warming, dissolves to a transparent, orange-red liquid. If glucose be added to this, the liquid becomes purple, and almost black. Cane sugar does not yield this reaction unless it is inverted, in which case the change of color takes place at once. The reaction takes place only in alkaline solution, and is sharp enough (according to Johnson) to recognize 1.5 gm. glucose in 10 liters of water.—*Lancet* and *Chem. Zeit.*

Note on an Apparatus for Fractional Distillation Under Reduced Pressure.

BY L. T. THORNE, PH.D.

In distilling *in vacuo*, or under reduced pressure, the chief difficulty is usually the removal of the various fractions without breaking the continuity of the distillation. It is believed that the apparatus, of which a sketch is annexed, will be found to be an improvement on those now in use. The receptacle *e* is a tube about ten to twelve *cm.* long and ten to twelve *mm.* in diameter, closed below with a stop-cock *c*, the lower delivery tube of which is drawn out to a narrow quill tube about four *cm.* long.*

Near the top of *e* is a tubulure *d* to admit the end of the condenser; the upper end is somewhat narrowed for convenience in making connection with the stop-cock *a*. The other end of the stopcock *a* is connected with a T-piece *h*, the outlet *i* of which communicates with the exhausting pump, and the third limb with the *three-way cock b*. To the other end of *b* is attached the tube *k*, the lower end of which is slightly drawn out and bent parallel with the quill



end of *c*. These two tubes are then passed through a doubly bored caoutchouc stopper *f*, on which is fastened the bottle, test-tube, or other receiver *m*. The drawn out end of the condenser or cooling tube *n* is fitted air-tight into the tubulure *d* by means of a cork, the end of the tube projecting well into *e*; the outlet *i* is connected with the vacuum pump, stop-cock *a* being open, and the three-way cock *b* so arranged that *h* and *k* are in communication, and the pump is set in action. In this way, the whole apparatus is exhausted, and the distillation is then commenced. As soon as the first fraction has passed over into *e*, or that receptacle has become full, stop-cock *c* is opened, when the distillate at once flows into *m*. Should the distillate be at all viscid and not flow easily, stop-cock *a* is closed, and the exhauster acting through *b* and *c* assists gravitation; *c* is then closed again, and if it is wished to change the receiver *m*, the three-way tap is so turned that *m* is put in communication with the air, while the bore leading to *h* is closed. When a fresh receiver *m* has been adjusted, *a* is closed for a few seconds, and *b* turned so as to place *h* and *k* again in communication, and when *m* is exhausted *a* reopened. In this way any number of fractions may be collected without for a moment stopping the distillation, and by selecting *f* of a suitable size, the distillate may, if desirable, be collected directly into the vessel in which it is afterwards to be used. In practice, it is found that, owing to the slight irregularity in working of the exhausting pump (especially where a water pump is used), it is very advantageous to insert between *i* and the pump a reservoir of two or three litres capacity. This reduces the effect of these irregularities very much, and if this reservoir be placed in direct communication with a mercury pressure-gauge, any desired reduction of pressure can, with a little care, be obtained and maintained constant. If the substance under distillation is affected by exposure to the air, any inert gas may easily be introduced instead of air by means of the three-way tap when changing the receiver.—*Journ. Chem. Soc.*, 43, 301.

* This has been found a convenient size for general laboratory use, but can of course be modified to suit special circumstances.

Cultivation of Vanilla in Mexico.

In Mexico, vanilla is planted either in a forest or in a field. In the former case, the underbrush, climbers, and large trees are cut down and removed, and the young saplings only preserved to serve as supports to the vanilla plant, preference being given to trees having a milky sap. Near each tree two cuttings of the vanilla plant are placed, side by side, in a shallow trench, and covered with dead leaves, brush, etc. The rest of the cuttings, to the extent of three or four feet, is placed against a tree, and tied to it. The supporting trees should not be nearer than twelve or fifteen feet apart, to give sufficient room for the development of the plant. After a month, the cuttings will have taken root, and must be carefully kept from weeds and briars of all kinds. In the third year, the plant begins to bear fruit, which it continues to yield for many years. When the vanilla is cultivated in a field, the Mexicans first plough the ground thoroughly, and raise on it a crop of corn. In the protection afforded by this plant, a number of young milk-bearing trees of the fig family grow, which in about twelve or eighteen months are large enough to answer as supporters to the vanilla plants, which are then placed as above described. In Mexico and Guiana, the plant is allowed to climb up the trees, the fertilization of the flowers is left to nature, and a large number of flowers constantly remain unfertilized, and the yield of vanilla is small. In a few days after fecundation, the flower falls off, and the fruit continues to grow till the end of the first month; it takes, however, another five months before it is completely ripe. Each pod must be gathered separately, and not the whole cluster at once, the time to gather them being indicated by the pods cracking when pressed with the fingers. If too ripe, the pods split on drying, changing the color from yellow to brown and black. If not ripe enough, the fruit will lack fragrance and proper color. The ripe fruit has no odor at first, the agreeable odor of vanilla being developed by a process of curing. When the first fruit is drying, an unctuous, dark-red liquid, called balsam of vanilla, exudes. In Mexico, the pods are collected and placed in heaps in a shed protected from rain and sunshine, and there left for a few days; they are then, if the weather is warm and clear, spread in the morning on a woollen blanket, and exposed to the direct rays of the sun; at about midday the blanket is folded round the beans, and the bundle is left in the sun for the remainder of the day. In the evening, it is inclosed in tight boxes to "sweat" all the night. The next day, the same treatment is adopted, and the beans, after exposure to the sun, acquire a dark coffee color, the shade being deeper in proportion to the success of the "sweating" operation. If the weather is cloudy, the vanilla is collected into bundles, a number of which are packed together in a small bale, which is first wrapped with a woollen cloth, then with banana leaves, and finally with a stout matting, which is firmly bound and sprinkled with water. An oven is then heated to 60° C., and the bales containing the larger beans are placed in it. When the temperature has fallen to 45° C., the smaller beans are introduced, and the oven closed tightly. Twenty-four hours afterwards, the smaller beans are taken out, and twelve hours later the larger ones. The vanilla has then acquired a fine maroon color. The drying operation then commences. The beans are spread on matting, and exposed to the sun every day for two months. When the drying is nearly completed, it is finished in the shade in a dry place, and the pods are then tied up in small bundles for sale.—*Oil, Paint, and Drug Rep.*

The Amount of Water of Crystallization in Precipitated Sulphate of Iron.

THEODOR SALZER draws attention to the fact that it is by no means certain that the precipitation of a solution of sulphate of iron (ferrous sulphate) by means of alcohol, always produces a uniform salt, containing 7 molecules of water of crystallization. He refers to former authorities (Gmelin) who state that alcohol can precipitate from a solution of ferrous sulphate, a partly dehydrated salt. The percentage of water in the precipitated salt depends, according to him, much on the degree of concentration of the solution; besides, the subsequent washing with alcohol may still further reduce it. He also strongly protests against the employment of the precipitated salt for the preparation of volumetric solutions, inasmuch as the possible error thereby introduced may make the titre of the permanganate solution altogether too high.—From *Pharm. Zeit.*, No. 41.

In No. 49 of the same journal, Mr. O. Schlickum publishes a reply to Mr. Salzer's statements, in which he shows conclusively that the composition of the precipitated sulphate of iron is quite constant, no matter how the manipulation is varied, excepting only that if the precipitated salt be *boiled* with strong alcohol, the product will be found to contain a smaller percentage of water of crystallization. If the operation is carried on in the cold, the resulting salt will always contain seven molecules of water.

"Pain-Killers."

"*New Idea*" gives the composition of two of these nostrums as fotlows:

1. *Richter's Pain Expeller.*

From 100 parts of capsicum make 600 parts of tincture; add a solution of 22 parts of soap in 100 of water; add thereto:

Water of ammonia	300 parts.
Camphor	30 "
Oil of rosemary	10 "
Oil of lavender	10 "
Oil of thyme	10 "
Oil of cloves	10 "
Oil of cinnamon	1½ "
Sugar coloring	q. s.

Mix and filter.

2. *Perry Davis' Pain Killer.*

Myrrh	2¼ lbs.
Capsicum	10 ozs.
Opium	8 "
Benzoin	6 "
Guaiac	3 "
Camphor	10 "
Alcohol	5 gals.

Preparation of Hypodermic Solutions.

MR. N.W. YEAKLE, in a paper read before the Indiana Pharmaceutical Association at its last meeting, recommends, for prudential reasons, more care than is sometimes used in the making of solutions for hypodermic use. Not infrequently impure water, as well as a dirty needle may be blamable for resulting abscesses. But when the pharmacist has taken all possible precautions, this blame cannot be laid at his door.

The method recommended by Mr. Yeakle is, to keep on hand for immediate use, a few small vials of carbolated distilled water (1 to 1,000). In making a solution, he first half fills a vial with a two-per-cent solution of permanganate of potassium, and with the aid of a Bunsen flame brings it to a boiling point, so as to hasten the oxidation of organic matter that the vial may contain. Rinse the vial well with distilled water. Then put the prepared medicated solution in the vial, and bring the contents to as high a temperature as the drug will permit without deterioration [*Query*, what is the limit?] and work. Mr. Yeakle has such solutions which, after eight months, show no indication of decomposition or organic contamination.

[The objection to the carbolated distilled water is that a solution of the strength mentioned favors rather than retards the growth of germs, and that a solution of sufficient strength to prevent such change may be irritating when used. Better use twice-distilled water for the solution, and inform the prescriber, if it is convenient to do so, and let him be responsible for the ingredients.—ED. N. R.]

Crimson Color for Show-Bottles.

THE following is somewhat expensive, but is said to give a beautiful and permanent color: Dissolve in water enough nitrate or chloride of cobalt to give the desired depth of tint Add, in excess, solution of ammonium carbonate to dissolve the precipitate at first formed; add gradually solution of ammonio-sulphate of copper till you obtain the requisite tint. Special care must be taken in filtering show colors. Strong saline solutions generally dissolve some proportion of the filter-paper, and it is best to use some inorganic medium, such as powdered glass or asbestos-cloth, or perhaps sponge.—*Chem. and Drug.*

Removal of Freckles.

AMONG the minor results of summer tours are to be counted the existence of freckles, and the consequent injury of the complexion for the coming season. Dr. Shoemaker, of Philadelphia, recommends for their removal the careful application of a small piece of ointment of the oleate of copper, at night, upon retiring. This ointment may be prepared by dissolving a drachm of the salt of oleate of copper (vide page 282), in sufficient oleic acid to give it proper consistency. [A correspondent of the *Jour. of Cutan. and Ven. Diseases* says the ointment causes furunculosis without removing the freckles.]

Medicated Bougies.

J. N. HURTY recommends * that medicated bougies be made as follows:

Take equal parts of glycerite of starch and powdered white soap, and equal parts of powdered starch and powdered tragacanth. Having thoroughly mixed the first two in a mortar, add sufficient of the starch and tragacanth to give the mass a proper consistence. Roll out a portion to form a bougie which may serve to estimate the weight of the finished product. Add the proper amount of the medicine to be used, and, after thorough mixing, roll out, and form into pencils. Four to five inches in length and two- to three-sixteenths is the usual dimension.

This mass, while sufficiently soluble, is not so quickly melted as cacao-butter, and is quite equal to gelatin. It is superior to the latter in its ease of manipulation, and when tannin or mineral astringents are used.

"Anti-Spree Mixture."

Pepsin, pure (in scales)	20 parts.
Water	2,000 "
Hydrochloric acid	15 "
Oil of sassafras	6 "

Mix. Shake well. Take a tablespoonful every hour.

Half-ounce doses of *Liq. ammon. acetatis* at intervals of two to four hours in water is a favorite in many hospitals, and three drops of tincture of nux vomica, in a little water, taken every hour, is a good remedy for bracing up on. These mixtures are chiefly serviceable for quieting the disturbed stomach, but are of little value in relieving the disorganization of the nervous system that ends in delirium.

Platinum-Plating Liquid.

IRON, tin, tin-plate, and brass may be easily platinized as follows: Pour on 1 part of chloride of platinum 1 part of water; acidulate with a little hydrochloric acid, and add 20 parts of alcohol. Evaporate to 15 parts, and add 60 to 90 parts of ether. Moisten a rag with this solution, and rub vigorously on the clean-scoured or polished metal. Heat to 140° F., and polish by rubbing with a woollen rag. —*New Idea.*

* Indiana Pharmacist.

Salt in Collyria.

To judge from an article in the *Practitioner*, Dr. Paul M. Chapman has just discovered that the addition of 2½ grains of common salt to the ounce of distilled water renders it more soothing to inflamed eyes; the use of distilled water alone causing discomfort, and this observation is going the round of journals whose editors appear not to be aware of the fact that the normal collyrium (the tears) have *always* contained salt and that ophthalmic surgeons everywhere always direct the addition of about a drachm of salt to each pint of water so used. Presently some wiseacre will *discover* that such lotions should be warmed to about the temperature of the body.—Ed. N. R.

New Test for the Purity of Copaiba.

Dr. Joseph Barber recommends the following method based on the optical behavior of copaiba, to ascertain its genuineness. It depends upon the fact that the refractive power of balsam of copaiba is precisely identical with that of the starch-granules of canna edulis, a species of arrow root ("tous les mois"), produced in the West-Indies and Australia, of a slightly yellowish tint. If a drop of the balsam of copaiba to be examined be placed upon an object-glass, and a few granules of canna starch be placed in it, the latter will remain invisible when viewed through the microscope, if the copaiba is pure. But if it is mixed with fixed oils or other foreign substances, the granules will become visible on account of their difference in refracting light.—*Pharm. Post.*

Syrup of Castor Oil.

The following formula is taken from the *Farmacista:*

Gum arabic	54
Orange-flower water	142
Castor oil	142
Sugar, in fine powder	196
Cinnamon water	8

Make a thick mucilage with the gum arabic and a portion of the orange-flower water, and mix it, in a mortar, with the castor oil until perfectly incorporated. Next add the sugar and the remainder of the orange-flower water, and finally the cinnamon water. After well-mixing in the cold, raise it to the boiling point, cool, skim, and preserve. [We would recommend to omit the boiling.—Ed. N. R.]

Cod-Liver Oil Administration.

According to Duquesnel, the disagreeable taste of cod-liver oil may be covered by the addition of 1 per cent of oil of eucalyptus. [We have tried this plan, but have found that it is only partially successful, inasmuch as several of the persons experimented with appeared to prefer the pure oil to the mixture, although they disliked the oil in any form. Where the object is to prevent the stomach being disturbed by the oil, a better plan is to add to the dose about 30 drops of sulphuric ether, and have both the oil and the ether cold.—Ed. N. R.]

Preparation of Naphthalin-Cotton.

Cotton deprived of the oily matter is saturated with either one of the following solutions, according as a lower or higher percentage of naphthalin is wanted in the product:

a. Naphthalin	1 part.
Ether	4 parts.
Alcohol	12 "
Or,	
b. Naphthalin	1 part.
Ether	4 parts.
Alcohol	4 "

—*Rundschau*, April 10th.

Alcohol may be dehydrated by suspending in it sheets of pure gelatin. The latter absorbs the water and becomes soft, but the process is very slow. The alcohol remains transparent.

Unalterable Fehling's Solution.

Mr. Sonnerat, in the course of a paper on alkaline copper solution as a reagent for glucose, states that he has succeeded in preparing Fehling's solution so that it will not deteriorate for several years even if exposed to light. The whole secret consists in making and mixing the solutions *while cold.* He gives the following directions:

Dissolve 34.639 *gm.* of pure, crystallized sulphate of copper in just sufficient distilled water in the *cold.* Also dissolve, in the *cold*, 173 *gm.* of pure and crystallized tartrate of potassium in 600 *gm.* of solution of caustic soda, spec. grav. 1.120. Add the copper solution very gradually to the alkaline solution, and make up to one liter with distilled water.—*Journ. de Pharm.* (5), viii., 28.

Diuretic Tea.

Cream of tartar	15 parts.
Borax	10 "
Lovage root (*Ligusticum Levisticum*)	25 "
Restharrow herb (*Ononis spinosa*)	25 "
Sassafras bark	25 "

Coarsely ground and mixed. A tablespoonful boiled with three cupfuls of water down to two cupfuls.—*New Idea.*

Creasote Wine.

Wood creasote	6 parts.
Compound tincture of gentian	30 "
Alcohol	230 "
Sherry wine	710 "

Mix. Dose, a tablespoonful two or three times daily in a cupful of water.

Recommended in phthisis, to diminish cough, fever, expectoration, etc.

Boracic Acid in Eczema.

The following application is recommended in the *Zeitschr. f. Therapie:*

Boracic acid (in very fine powder)	6 gm.	= 90 grs.
Balsam of Peru	0.5 "	8 "
Vaseline	30 "	1 oz.

To Prevent Silver from Tarnishing.

Silver may be kept from tarnishing by painting it with a soft brush dipped in alcohol in which some collodion has been dissolved. The coating can be removed by dipping the article in hot water, but it completely protects it from tarnish.—*Furniture Gazette.*

Covering the Odor of Iodoform.

A correspondent of the *Pharmaceutische Zeitschrift für Russland* states that the following combination completely covers the odor of the iodoform:

Iodoform	gm.	4	= 60 gr.
Vaseline or lard	"	30	1 oz.
Naphthalin	"	0.3	5 gr.
Oil of peppermint	gtt.	10	10 gtt.

Atomizing Liquids for the Sick-Room.

Oil of turpentine, best	20 parts.
" lavender	2 "
" eucalyptus	2 "
" lemon	1 part.
" bergamot	1 "
Alcohol	100 parts.

Mix. Expose to the rays of the sun for one week shaking it once in a while.

Accelerated Precipitation of Chloride of Silver.

According to Whittel, the precipitation of chloride of silver may be hastened if a few drops of chloroform be added to the liquid. The effect is purely mechanical, and may be useful also in the case of other precipitates which might require some time to separate.—*Scient. Amer.*

Musk.

MUSK is a secretion of the musk deer (*Moschus moschiferus*), which inhabits the Alpine regions of the northern provinces of Thibet, and is also found in the southern borders of China, and in Siberia as far as lake Baikal. According to recent reports, it has been found in the provinces of Fohkien and Kiangsi, but does not seem to be hunted there. The pouch that grows on the belly is about 2½ inches long, 1⅔ in diameter, and weighs about 30 grams (over an ounce). It must be cut off as soon as the animal is dead, tied up and dried. On the interior walls of this pouch is the musk, which looks like snuff, and which, if unadulterated, consists of smooth, dry particles, having a greasy feeling, is very friable, of a reddish-brown color, and has the peculiar and unmistakable odor. There are two principal varieties, Tonquin and Yunnan musk. The former comes from Thibet and Szechuen, the latter from the province of Yunnan, and both kinds find their way to Shanghai, through Chunking and Laukow. In addition to the ordinary Tonquin and Yunnan, there is a finer grade of each, distinguished by adding the term Taupi, thus Tonquin-taupi, which signifies the musk without the skin, otherwise the pouch is included. Both grades have an extremely fine perfume and bring a much higher price, but find little use in Europe.

The odor is perceptibly different from the common ware, hence it might be supposed that they were derived from a totally different animal or came from another region. A third sort is the Cabardine, or Russian musk, from Tientsin. Its perfume is not nearly so fine as that from Tonquin and Yunnan, and the loss from hair, skin, and moisture is much greater, hence its value is much less. Tonquin musk is the one chiefly exported to Europe and America. Cabardine musk is less esteemed there, and Japan is the principal market for the Yunnan musk. In the first half of 1882, Japan took 340 catties of this musk.

For some time past there has been a marked decrease in the quantity of Tonquin musk received. The Chinese dealers attribute this to the establishment of a protective law in the hunting section. This circumstance, combined with active demand in London, and a small supply on hand, caused the price to rise from 71 or 72 taels per catty in 1881, to 120 taels in 1882. (The Shanghai tael is $1.15, and the catty weighs 1⅓ lbs. avoid.) This hunting law is said to have been removed recently, but no change in price nor increase in receipts has yet been detected.

If some limit was actually put upon the musk hunting in Szechuen and Thibet, at all events Yunnan did not follow the example, for the receipts from this province are always abundant, so that the total export of musk seems but little less than last year. Independently from the fact that the price of Yunnan musk has followed that of Tonquin musk, the large production of the former had little influence upon the business in Europe, where neither sort has increased in favor nor in consumption. The Chinese firms that deal in musk have, as a rule, branch houses in the chief cities of Yunnan and Szechuen, and in Chungking, Zchang, and Laukow. They advance the money to the hunters upon the musk, and thus prevent the article from falling into other hands than those of regular dealers. Every large musk firm has agents in Shanghai and Canton to look after the sales. In Shanghai, there are only five "hongs" for Yunnan and Tonquin musk; they all live in the same neighborhood, and there is no competition between them, as they form a kind of monopoly. The business in other articles of export is done by brokers, or middle-men, who are foreigners, and who carry samples of newly received products around to their customers; but with musk this is not the case. Here the buyers must seek some other means of informing themselves when a new "chop" comes in, and the musk dealers seek to secure themselves from being too quickly deprived of their wares. Musk is sold here only in the original chests of 10 to 20 catties (averaging 20 cathes), or in whole "chops." The buyer does not have his choice of the individual bags, cannot divide a chop, but must either take the original consignment just as it comes from the interior, or refuse it all.

There is no particular season for musk; it comes into the market at irregular intervals throughout the entire year. The Cabardine musk, brought from Tientsin, is sold by special "hongs."

The export of this drug will always remain within moderate limits, not only because the production is limited by nature, but also because the Occidental demand has as competitor the still stronger demand for home consumption. It is well known that in China everything smells of musk. Both sexes are accustomed to carry it with them in little boxes, and to keep it in their clothes presses. While it is losing ground in European therapeutics, the cures attributed to it in China are very manifold, as may be supposed from their mythical nature. When we consider that an export of 3,000 catties, each catty containing 15 to 20 pouches of Yunnan, or 20 to 30 of Tonquin musk, means the sactifice of no less than 60,000 musk deer, and this quantity has been reached several times of late years, and then if we add to this the consumption in China itself, which can scarcely be estimated, we see that it is not too much to fear the entire extirpation of this useful as well as graceful animal. Hence, it would be desirable that the beforementioned rumor of the legal establishment of a period of protection should be confirmed, even if the development of this branch of trade should suffer some in the immediate future.

The adulterations of this ware seem to be as ancient as the trade itself. Du Halde mentions it as being very common, and refers to pulverized rotten wood as one of the ingredients, and he also speaks of artificial pouches with which they avoided the law then in force against selling musk to foreigners. At present, really pure musk scarcely comes in the market at all. Even the best chops do not contain more than 50 or 60 per cent of genuine substance, and on the average we must be satisfied with about 30 per cent. The adulterants of musk are generally coagulated blood, a fatty earth (or ocher), paper, hair, pieces of leather, etc., which are introduced into the bags so skilfully as to require a sharp eye and years of experience to be able to detect it. It is not customary here to make any chemical test. The musk inspector takes out a little of the substance with a silver needle, notices its odor, and estimates its value. The pods or bags are immediately assorted according to the percentage of adulteration that he thinks he has discovered in it, and put in piles called 1, 2, and 3, for the European or American market, where this classification is frequently changed and others substituted.

Each pouch is then wrapped in Chinese paper and put in a pasteboard box, lined with lead and covered with silk. Each of these boxes contain a catty of musk; they are finally put in a wooden box lined with zinc. These boxes are of different sizes, according to the sizes of the chop to be packed.

They are generally shipped by the mail steamers, being placed in the safe reserved for bullion and treasure. These precautions are necessary on account of the high price of the goods as well as liability to evaporation. The ships of the old East India Company are not allowed to take any musk on board.

The total export for the last five years was 25,664 catties, or 33,876 lbs., valued at $2,728,800. The chief port of export is Tientsin. Shanghai and Canton export very little.—(*From the report of the German Consul-General in Shanghai.*)

Action of Hydrogen Peroxide upon the Organism.

THE action of hydrogen peroxide upon the living organism is poisonous in large doses, inasmuch as it affects the spinal marrow, the excessive irritation of which is shown by convulsions. The urine shows the presence of sugar. The fatal hypodermic dose for a dog of 3 kilograms in weight is 25 *cm.* (about 400 minims) of a 4 per cent solution.—*Ber. d. Deutsch. Chem. Ges.*, 7, 1105.

Theodore Metcalfe & Co.—Mr. Frank A. Davidson has succeeded Mr. Th. Doliber (see page 287), as partner in this firm.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

Correction of the Pharmacopœial Volumetric Test for Hydrocyanic Acid.

EDITOR NEW REMEDIES:

The following corrections should be made in the volumetric test for hydrocyanic acid in the new U. S. Pharmacopœia:

Page 397, line 7 from bottom; after 0.0054 *add* (as alkali cyanide).

Page 16, line 13 from bottom; instead of 13.5 gm. *read* 6.75 gm.

Page 398, line 4 from top; instead of 13.5 gm. *read* 6.75 gm.

A. B. PRESCOTT.

ANN ARBOR, MICH.

No. 1,145.—**Metallodium** (Amateur).

This name has recently been applied by H. Aron, of Berlin, to a mixture of gun-cotton or collodion with various metallic oxides, which he found under certain circumstances to be a good conductor of electricity. Even sulphate of lead, carbonate of lead, and some other salts yield with collodion similar mixtures to which carbon may be added in order to render them hard.

No. 1,146.—**Naphthalin** (U. J.).

The New York Coal Tar Chemical Company (10 Warren street) has again begun to manufacture naphthalin. Their product, while not specially recrystallized, is quite white and free from impurities. It may be used for all purposes for which naphthalin has been recommended.

No. 1,147.—**Vienna Bread** (T. A. C., Mount Vernon, Ala.).

Bread-making is hardly to be considered germane to pharmacy, but it so happens that we have directions for making this variety of bread in the form of small loaves, which may answer your purpose. "Wiener Kaisersemmel" are made as follows:

Finest wheat-flour	8 lbs.
Milk	3½ quarts
Water	3½ "
Compressed yeast	3½ oz.
Salt	1 "

After all the materials have acquired the temperature of the baking-room, the flour is poured, in a loose heap, in the middle of the baking trough, and a small quantity of the heap, on one side, mixed to a thin dough with the milk and water previously poured together and mixed with the yeast and salt. The dough is allowed to stand ¾ hour, well covered. After this time, or as soon as fermentation has begun, the dough is mixed intimately with the remainder of the flour and the rest of the liquid, and left to rise for 2½ hours. It is then cut into pieces weighing each 1 pound, each of which is divided into 12 square pieces of equal weight. The corners of each of these squares having been turned over to the centre, the cakes are put in the oven and baked for 15 minutes. The heating must be uniform; if the oven is hotter in one place than in another, the cakes must be shifted about.

To impart a gloss to the cakes, they are brushed over with a sponge dipped in milk.

No. 1,148.—**Crystallized Yellow Oxide of Lead** (P. Laboratory).

Becquerel has obtained the yellow oxide of lead in a crystalline form in the following manner:

Five parts of commercial potash are heated to quiet fusion in a silver capsule. When the excess of water has escaped, one part of finely powdered hydroxide of lead (obtained by precipitation from the nitrate) is added, and the heat continued until the oxide is dissolved and a clear dark-yellow liquid results. On rapid cooling, a considerable portion of the yellow oxide crystallizes out. But in the middle of the mass, where the cooling takes place slowly, crystalline *red* oxide is formed at the same time. It is, however, difficult to separate the two oxides from each other.

Prof. A. Geuther has lately published a paper on the yellow and red oxide of lead, in which he gives an improved process (*Liebig's Ann. Chem.*, vol. 219, 56) for obtaining large transparent crystalline plates of strong lustre and pure yellow color. A solution of seven parts of commercial potash, in fourteen parts of water, is heated to boiling (about 110° C.) in a silver capsule; one part of finely powdered hydroxide of lead is then added, and the boiling kept up until almost all the oxide has been dissolved. The solution is allowed to cool slowly, and, when it has reached about 75° C. (167° F.), the oxide begins to crystallize. When cold, the mother-liquid is poured off from the large crystals, which are repeatedly washed with water, whereby a small quantity of pulverulent red oxide (formed from the hydroxide of lead which failed to enter solution) can easily be removed.

No. 1,149.—**Powdering Boracic Acid** (E. S.).

If you require large quantities of powdered boracic acid, it will be much better for you to buy it in powder from some reliable house. Owing to the flexibility of the minute crystals, it is a tedious operation to powder them by hand. However, a small quantity at a time may easily be reduced to a very fine powder in a porcelain or wedge-wood mortar if it be occasionally dampened with ether. Another plan, suggested by Mr. R. Fingerhutt, of this city, is to use a heated mortar, and add a few drops of glycerin.

No. 1,150.—**Salicylate of Bismuth** (J. W. N. and W. S.).

This salt has been highly recommended by Prof. Henri Desplats, of Lille, for destroying the life of bacilli of typhoid fever in the beginning stage of the disease, as long as they are supposed to be localized in the intestine. Of all remedies known to be poisonous to bacteria, salicylic acid is no doubt the most suitable, since a large quantity of it can be given without direct injury to the system. But to reach the affected portions of the intestinal canal, it must be given in a shape in which it will not be rapidly dissolved and assimilated in the stomach, and of all salicylic compounds, the bismuth salt has been found to be the best.

We are not aware that this salt has ever been studied or described; but we have prepared it ourselves, and will briefly state our experience.

It is impracticable to attempt to saturate salicylic acid either in aqueous or in alcoholic solution with subarbonate of bismuth, either in the cold or at a boiling temperature, since the salicylate of bismuth is almost insoluble in either liquid, and there would be no possibility of separating the salt from the undecomposed subcarbonate. The best way is to prepare a solution of the subnitrate by means of nitric acid and water, and to decompose it by a solution of salicylate of sodium. Since the acid solution of nitrate of bismuth cannot be much diluted with water, without precipitating some subnitrate, it is best to pour the nitrate solution into the sodium salt dissolved in much water. The following working process will furnish a good product:

Subnitrate of bismuth..... 4 parts.
Salicylate of sodium..... 7 "
Nitric acid,
Water, each, a sufficient quantity.

Mix the subnitrate of bismuth, in a flask, with twenty-five parts of water, and gradually add nitric acid, constantly stirring, until the subnitrate is dissolved, avoiding an excess as much as possible. Dissolve the salicylate of sodium in two hundred and fifty parts of water. Then, while stirring the latter, pour the solution of nitrate of bismuth gradually into it. Collect the precipitate on a filter, wash it thoroughly, and dry it. Average yield: 3.75 parts or about 94% of the subnitrate.

The salicylate of bismuth is soluble in acids. Since the solution of nitrate of bismuth is acid, the whole of the bismuth is not precipitated, a portion passing into the wash-water which should, of course, be recovered. The quantity of salicylate of sodium is slightly in excess of the required quantity, but this is necessary to prevent the simultaneous precipitation of subnitrate.

No. 1,151.—**Medicated Gelatin Bandage** (Dr. W.).

An abstract of a paper on the gelatin bandage as a dressing in certain skin diseases, with an editorial note on its prospective uses in burns, will be found on page 269 of this number.

In addition to the salicylated gelatin bandage there mentioned, we may add that Prof. Pick also uses a *carbolated bandage* containing up to ten per cent of carbolic acid. In some forms of skin disease, he employs a mixture containing either pyrogallol (pyrogallic acid), from ten to twenty per cent, or chrysarobin. The former is transparent, and permits the examination of the skin; the latter is yellow and opaque.

Drs. Unna and Beiersdorff have lately experimented on the applicability of this method to other remedies, and have found that the proportion of gelatin, water, and active ingredient must be changed according to the nature of the latter. They have established three series of masses, containing respectively five, ten, and twenty per cent of gelatin, which they have classified in tables, in each of which the respective remedies are enumerated (see *Monatsh. f. prakt. Dermat.*, 1883, No. 2). Table *A* contains jellies with five per cent of gelatin, of a consistence of a gelatin-bougie; they are easily melted by being immersed in hot water, and, after being applied to the skin, rapidly solidify. They are called *Gelatinæ glycerinatæ molles*. Table *B* contains the *Gelatinæ glycerinatæ duræ*, with ten per cent of gelatin. In the case of these, it suffices to pour a few drops of hot water upon the surface, and to rapidly apply the solution thus produced, which sets quickly. Table *C* enumerates the jellies with twenty per cent of gelatin; these are made without water. Among these are the jellies of pyrogallic acid and tannin, because any addition of water in these cases would cause chemical changes. The authors also found that fatty substances, up to thirty per cent, even with addition of water, can be incorporated in the mass, provided it consists only of gelatin and glycerin. In the case of chrysarobin, the authors likewise recommend the omission of water, and to make it so as to contain five per cent of gelatin, five or ten per cent of chrysarobin, and ninety or eighty-five per cent of glycerin.

No. 1,152.—**Iodide of Calcium** (P).

According to R. Rother (in *Am. Jour. Pharm.*, May, 1883), the most advantageous process for preparing iodide of calcium consists in decomposing iodide of iron (ferric) with carbonate of calcium, in the following manner:

254 parts of iodine are gradually added to 56 parts of iron wire and 1,200 parts of water. When the reaction is completed, and the liquid has acquired a green color, it is filtered, and the remainder of the iodine (127 parts) added, which dissolves in the liquid, rendering it brownish-red. A sufficient quantity of carbonate of calcium (150 to 160 parts) is now added, which causes effervescence. When the latter begins to subside, the mixture is warmed until no more gas is given off, and all the iron is precipitated. The supernatant liquid is now poured off, the residue mixed with enough water to restore the original weight, again allowed to settle, and the liquid again decanted. The united liquids are then filtered, the residue next transferred to the same filter and washed with water until all the iodide of calcium is washed out. The filtrates are finally concentrated until a thick skin begins to form on the surface, when the fused mass is poured into a flat capsule, allowed to cool (care being taken that it cannot absorb moisture), then broken in pieces and preserved in well-closed vials.

No. 1,153.—**Formamide of Mercury** (Chicago).

Since we published a small note on formamide of mercury, in our last March number, we have been favored with a communication by Dr. C. Schacht, of Berlin, in which he calls our attention to the fact that he made a report on its mode of preparation at a meeting of the Berlin apothecaries, held on December 12th, 1882 (which was published in the *Pharm. Zeitung* of December 16th). Having had a query on this subject on our files for some time, we shall give the substance of Dr. Schacht's report as a reply.

"Formamide is a colorless liquid, boiling at about 195° C., which can be distilled without decomposition only in vacuo. It is prepared by acting upon formate of ethyl by ammonia. When pure it is neutral, but easily becomes acid.

"If a *concentrated* solution of formamide be *boiled* with precipitated mercuric oxide, decomposition ensues, and metallic mercury is separated.

"On the other hand, if a *dilute* solution of formamide be *warmed* on the water-bath with precipitated mercuric oxide, a clear, colorless solution results, in which soda (hydrate of sodium) produces *no* precipitate. Sulphide of ammonium, however, precipitates the mercury as sulphide, both from the formamide of mercury and from mercuric chloride. Solution of albumen precipitated by the latter salt, but *not* by the formamide.

"Formamide of mercury is prepared in the following manner: 10 to 13 grms. of freshly precipitated, completely washed, and still moist mercuric oxide is gently warmed with a little water in a porcelain capsule, with gradual addition of 10 grms. of formamide. As soon as solution has taken place, the resulting colorless liquid is filtered into a liter-flask, and the latter filled to the liter-mark with distilled water. Each cubic centimeter contains 0.01 grm. of mercury, which is the quantity representing *one* hypodermic dose. Formamide of mercury keeps well in brown-colored bottles, and should also be dispensed in these.

"Formamide may be purchased of C. A. F. Kahlbaum, Berlin, S.-O., 16–19 Schlesische Strasse, at 15 marks per 100 grms."

In addition to the above, we may add, that formamide is probably best prepared by Brend's process (*Annales d. Chem.*, 128, 335), namely, by heating 2 parts of formate of ammonium with 1 part of urea, until no more carbonate of ammonium is given off. According to Basarow (*Ber. d. Deutsch. Chem. Ges.*, 4, 409), it may also be obtained by acting with sodium amalgam upon a solution of cyanate of potassium.

No. 1,154.—**Hypophosphorous Acid** (E. D.).

This correspondent writes:

There is a formula on page 1173 of the new *U. S. Dispensatory*, for the preparation of a 50-per-cent solution of of hypophosphorous acid, depending upon the precipitation of hypospospite of lead, $Pb(H_2PO_2)_2$. Chemistry teaches that all hypophosphites are soluble in water. Thinking, however, that the lead-salt might be precipitated from saturated solutions of both salts, I tried it, following every detail, but with complete failure. What explanation can you offer?

The formula alluded to by our correspondent is as follows:

"Dissolve 5⅛ avoir. ounces of hypophosphite of calcium and 15⅛ avoir. ounces of acetate of lead, each in a pint and a half of distilled water, and mix the solutions. The

precipitated hypophosphite of lead is washed with a small quantity of distilled water, then suspended in 8 fluid ounces of water, and sulphuretted hydrogen passed through, until the precipitate is entirely decomposed. The liquid is then filtered, the precipitate washed with a small quantity of water, and the filtrate and washings evaporated at a low heat until all odor of sulphuretted hydrogen is dissipated. When cool, sufficient distilled water is added to make the whole weigh 8 ounces av."

This formula, as our cosrespondent surmises, is not correct, since no hypophosphite of lead is thrown down. Although it is stated by some authorities that this salt is but sparingly soluble in cold water, yet the presence of almost any other soluble salt will prevent its precipitation. In fact, it is quite soluble in water by itself. Hypophosphorous acid cannot be made in the manner stated.

If this acid is required in a very pure state, it must be prepared from a salt, the base of which can be precipitated completely by another acid. The barium salt is usually selected. Hypophosphite of barium is prepared by boiling phosphide of barium in a retort with water, whereby a portion of the phosphorus is oxidized (at the expense of the oxygen of the water) and converted into hypophosphorous acid which combines with the barium, while another portion of phosphorus combines with the hyd ogen of the water and escapes in form of phosphoretted hydrogen. The contents of the retort are then filtered and the barium is thrown down in the filtrate by diluted sulphuric acid, avoiding an excess. Hypophosphite of barium may also be purchased from chemical manufacturers; and this is generally preferred, as the above process requires special facilities for proper working.

The hypophosphorous acid of commerce, however, is not made in this way, since its price would thus be much higher, and its purity greater than it actually is. Every specimen of the commercial acid we have examined contains more or less of calcium salts and of sulphuric acid, and it is therefore probable that another process has been used in its preparation. Procter recommended to decompose the calcium salts by oxalic acid, as follows: To a solution of 480 grains of calcium hypophosphite [in the *National Dispensatory*, p. 1073, read thus, instead of hyposulphite] in 6 fluid ounces of water add a solution of 350 grains of oxalic acid in 3 fluid ounces of water; filter from the precipitated calcium oxalate and evaporate to 8½ fluid ounces. The product will contain 10 per cent of the acid.

But this product will also contain a very considerable quantity of oxalate of calcium, since this salt is soluble to a considerable degree in the hypophosphorous acid liberated.

Perhaps the best way to prepare the acid is the following:

Mix 100 parts of powdered hypophosphite of calcium in a mortar with 100 parts of distilled water, then gradually add, while triturating, 100 parts of a cold mixture of equal parts (by weight) of concentrated sulphuric acid and distilled water, and finally add 200 parts more of distilled water. Set the mixture aside in a bottle or beaker, in a cool place for twelve hours; then decant the clear liquid, transfer the clear liquid to a strainer, and wash it with alcohol. Add precipitate washings to the decanted liquid, filter from the precipitated sulphate of calcium, and evaporate, at a heat *not exceeding* 160° F., to 155.5 parts. The product will be a 50% acid. If it is to be quite pure, *all* the calcium sulphate must be precipitated, for which purpose at least 2 volumes of alcohol must be used for every 1 volume of aqueous acid. The slight excess of sulphuric acid can be removed by the cautious addition of baryta water. The alcohol may be distilled off without risk or danger, but the concentration of the aqueous acid in an open capsule on the water-bath must be conducted *cautiously*, since it is liable to suddenly *ignite* (without explosion usually) when heated too high.

No. 1,155.—**Liquid Paste** (J. Q.).

The following will probably answer:

Upon 10 lbs. of potato starch pour 6 quarts of water and add ½ pound of nitric acid. Let the mixture stand, in a warm place, for forty-eight hours, frequently stirring; then boil until the mass becomes a thick fluid and strongly transparent. If it is too thick, dilute it with water and strain through muslin.

Dissolve 10 pounds of gum arabic and 2 pounds of sugar in 5 quarts of water, add 2 oz. of nitric acid, heat to boiling, and add this liquid to that previously strained.

The resulting paste is liquid, does not get mouldy, and dries on paper to a shining layer.

No. 1,156.—**Fumigating Pastilles** (A. D. B.).

These are generally prepared from a mixture of finely powdered charcoal, nitrate of potassium, aromatic substances (mostly of a resinous or balsamic nature) and mucilage of tragacanth, formed into small cones, usually with three flattened sides, and the corners at the base somewhat drawn out.

Various odors may be incorporated in these pastilles. We append some formulæ:

1. *Rose-Pastilles.*

Olibanum	240 parts
Storax	240 "
Nitrate of Potassium	160 "
Rose-leaves, dried and powd.	500 "
Charcoal, powd.	1800 "
Oil of rose	20 "

2. *Orange-Pastilles.*

Olibanum	240 parts
Galbanum	240 "
Storax	240 "
Nitrate of potassium	160 "
Orange peel, powd.,	500 "
Charcoal, powd.,	1800 "
Oil of neroli	20 "

3. *Vanilla-Pastilles.*

Olibanum	240 parts
Galbanum	240 "
Storax	240 "
Nitrate of potassium	160 "
Cloves, powd.	160 "
Vanilla, powd.	500 "
Charcoal, powd.	1200 "
Oil of Cloves	10 "
Tincture of vanilla	160 "

The ingredients are finely powdered and made into a homogeneous dough with a solution of about 1½ oz. gum arabic in 1 quart of water.

No. 1,157.—**Camphorated Dover's Powder** (D. J. A.).

There is no standard formula known for this compound. But the following three combinations have been in considerable use formerly:

1. *Selle's camphorated Dover's Powder.*

℞	Ipecacuanhæ	gr. 2
	Opii	" 4
	Camphoræ	" 8
	Sacchari	" 160

M. Divide into 8 powders.

2. *Richter's.*

℞	Ipecacuanhæ	gr. 2
	Opii	" 1
	Camphoræ	" 1
	Sacchari	" 12

M. One powder, as an average adult dose.

3. *Von Graefe's.*

℞	Opii	gr. 3
	Camphoræ	" 6
	Potassii nitratis	" 30
	Sacchari	" 60

M. Divide into 6 powders.

As the new pharmacopœia has adopted a standard formula for Tully's powder, under the title: Pulvis morphinæ compositus, we should say that this ought to be used when a "Camphorated Dover's Powder" is called for.

No. 1,158.—**Compound Parsley Mixture** (Ana).

This is a nervous sedative and tonic, recommended by Hammond. Its composition is as follows:

MISTURA APII COMPOSITA.

℞ Extract erythroxyli fl	f℥ 2
Extract viburni (prun.) fl	f℥ 2
Extract apii (graveol.) fl	f℥ 1

Misce. Dose: one to two teaspoonfuls thrice daily.

No. 1,159.—**Putz Pomade** (See Queries 1,121 and 1,129).

A. Gawalowsky has analyzed the "Putz Pomade" of the firm E. & R. Mendl, and has found it to contain certain constituents which show it to be composed of fatty acids, 54 per cent; oxide of iron, 10 per cent; powdered pumice stone, 32 per cent; water and oil of mirbane, 3.66 per cent.

Other brands of the same article seem to have about the same composition.

No. 1,160.—**Improvement in Ointments.**

A correspondent sends us the text of a patent, No. 16,845, granted by the Canadian government, in which the patentee claims "A compound composed of the following ingredients: fresh unsalted butter, two pounds; black wool, cut from the sheep's breast at the full of the moon, one ounce; three fresh eggs, and flowers of sulphur, two tablespoonfuls." He adds, "*Black wool cut at the full of the moon* is good, but it may be their way of putting hair into their butter. It certainly saves the wear and tear on the hired girl's head."

Cholera Remedies.

Now is the time to get ready your supply of anti-cholera drops. Here are the stock formulas published annually since the epidemic of 1866.

1. The "*Sun Remedy*," published in 1866 by the N. Y. *Daily Sun* and since then by almost every paper in the land. Every well-regulated clergyman in the country has it in his pocket-book for immediate reference: Two fluid drachms each of the tinctures of opium, camphor, capsicum, rhubarb and peppermint (concise and easily remembered). Take a teaspoonful in water every time the bowels move loosely.

(2) *Another.* Tinctures of opium, camphor, catechu, rhubarb, and peppermint, of each a fluid ounce; tincture of capsicum, half a fluid drachm.

(3) *Squibb's*, which is sometimes called *compound opium mixture.*

Chloroform	fl. ʒ 6
Tincture of opium	fl. 2
Spirit of camphor	fl. 2
Tincture of capsicum	fl. 2
Alcohol, sufficient to make	fl. 10

Dose 40 to 60 drops taken in water each time the bowels move loosely.

It is important in any case of diarrhœa, but is rarely appreciated except by physicians, that whenever there is too free action of the bowel, the patient should stop exercising and *lie down*—flat on the back—and stay there as quietly as possible. If there is pain, apply heat—dry heat is best.

In connection with the subject of cholera it has been said by Eli McClellan, Surgeon U. S. Army, one of the best authorities on the subject of cholera in this country, that the cholera poison requires an alkaline medium in which to develop, and that one of the best prophylactics is a mixture of aromatic sulphuric acid and laudanum; two parts of the former to one part of the latter. For an adult, thirty drops; for a child ten years old, ten drops, and for a child under ten, five drops, in a little water every one, two, or three hours, as occasion may require.

Of the prophylactic value of sulphuric acid the editor learned some interesting facts some years ago from the foreman in a large bronze foundry who had been through two epidemics of cholera in Paris. Not a man who was employed in a bronze-foundry (so he said) contracted the disease; which may be accounted for by the fact that "oil of vitriol" is extensively used in cleaning the castings, and acid fumes are almost always present in the shops. On the other hand, some observers ascribe the effect to the fumes and dust of copper.

Formulæ asked for by Correspondents:

1. Hayden's Viburnum Compound.
2. Farrell's Arabian Liniment.
3. Miasmine.
4. Grove's Herb Extract (made in Harrisburg, Pa.?).
5. Psychine.

Answers in Exchanges.

DRUGGIST'S CIRCULAR.

Compound Elixir of Partridge-Berry.—King's *American Dispensatory* gives a formula for a compound syrup of partridge-berry which is essentially an elixir.

Partridge-berry	1 pound.
Helonias root	4 ounces.
High cranberry bark	4 "
Blue cohosh root	4 "
Sugar	2 pounds.
Brandy	sufficient.

Grind and mix the articles together. Place them in a convenient vessel, and add enough brandy to cover them. Close the vessel, and after three days transfer its contents to a percolator. Gradually add enough brandy to obtain three pints of percolate, which is to be set aside. Continue the percolation with water until the drugs are exhausted. To this second percolate add the sugar, and evaporate it, at a gentle heat, to five pints. When the liquor is cold, mix it with the three pints of reserved percolate, and filter. Flavor to taste with anise-seed or sassafras. This is sometimes called "*Mother's Cordial.*" Dose two to four fluidounces three times a day, equivalent to eighteen to thirty-six drachms of brandy per diem.

Thompson's Eye Water.—

Sulphate of zinc	20 grains.
Sulphate of copper	5 "
Tincture of saffron	2 drachms.
Tincture of camphor	1 drachm.
Rose water	8 ounces.
Distilled water	8 "

Mix and filter.

[It is difficult to understand the usefulness of such a mixture in any disease of the eye which could not be quite as well accomplished by a simple solution, of proper strength, of sulphate of zinc in distilled water.—ED. N. R.]

To Remove the Odor of Valerianate of Ammonium.—A few crystals of chloral hydrate rubbed on utensils which have the odor of valerianate of ammonia is said by a correspondent to be very effectual.

Oleate of Sodium and Metallic Oleates.—The neutral salt may be prepared by saturating oleic acid with soda. The combination is better effected at a moderate heat with a little water, and the mass is purified by crystallizing from alcohol. Oleate of sodium is soluble in ten to twelve times its weight of water, but is not deliquescent. By contact with air it becomes gelatinous. When intended for the making of metallic oleates, it may be made from ordinary white Castile soap, by the process of Dr. L. Wolff, as follows: Dissolve one part of the soap in eight parts of warm water, and let it stand for twenty-four hours, when, on cooling, most of the palmitate of soda will be deposited, while the liquor will consist mainly of oleate of soda in solution. This being drawn off is now treated with a concentrated solution of the metallic salt, free from acid. The resulting precipitate is collected, washed, and dried on a water-bath, after which it is taken up with six or eight times its weight of petroleum-benzin, which dissolves out the metallic oleate, and leaves behind any palmitate that

may be present. After decanting and evaporating the clear portion, a pure oleate results. The advantage of the oleates is their amorphous condition, the palmitates being crystalline. Oleates of mercury, iron, and copper, and palmitates of zinc, bismuth, and lead are preferable.

To dilute oleates, use some non-oxidizable substance, such as petrolatum.

To test Anilin Colors.—Mineral adulterants are readily detected. Pure anilin colors leave no appreciable residue after ignition. Fifty per cent of sugar is sometimes found (the most common adulterant). To detect it, dissolve the sample in a mixture of alcohol and ether, in which sugar is insoluble. Even pure colors vary in quality. The practical test for this is a standard kept on hand. Equal amounts of this and of the sample to be tested are made into similar solutions, and, into these, portions of white woollen yarn, merino, or cassimere are dipped and, after heating a sufficient time, removed, washed, and dried. The difference in color will show the relative values of the two substances. Instead of making a test-solution of the standard each time, the fragments of stuff dyed with it may be pasted in a book for reference. But care must be used to exclude light which will in time cause the color to fade.

To Prevent Scratching Matches on Paint.—A correspondent in Florida, speaking of the defacement of paint by the inadvertent or heedless scratching of matches, says that he has observed that when one mark has been made others follow rapidly. To effectually prevent this, rub the spot with flannel saturated with any liquid vaseline. "After that, people may try to strike their matches there as much as they like, they will neither get a light nor injure the paint," and, most singular, the petroleum causes the existing mark to soon disappear, at least when it occurs on dark paint.

[Equally practical is a suggestion, just going the rounds of the journals, that, to prevent *dogs* from urinating in corners and about projecting posts, boxes, etc., it is sufficient to sprinkle a little powdered carbonate of ammonium. After the preliminary sniff, the visitor does not wait to complete his purpose, but *moves on*.

Another suggestion towards abating an every-day nuisance is, that a growing castor-oil plant will rid a room of *flies*. Some are found dead around it and adhering to its leaves, the others disappear.

It is also suggested that a similar property resides in a large Japanese lily (*Lilium auratum*) which, aside from this virtue, is one of the handsomest of its species, and would form, like the castor-oil plant, an attractive feature in any store.

Now that we are speaking of this subject, it may be well to say that a very effectual exterminator of flies is the following method: At night, when the store is closed, blow, with any one of the various insect-powder blowers, a small quantity of Persian Insect Powder into the air of the room. In the morning, the flies will either be found dead or in a state of debility which will admit of their being swept out when the store is "brushed up" at the usual hour.—Ed. N. R.]

To Fasten Pestle Handles.—Plaster of Paris is recommended as not liable to soften with heat or become brittle by cold. A moderately thick paste made with water is to be poured into the aperture of the pestle; the handle is then inserted and held firmly down for a few minutes, or until the plaster sets. The excess is then to be wiped off, and after a few hours it can be used.

[*The Chemist and Druggist*, for July, gives another method as follows: Make the pestle hot enough to melt shellac, or to keep it fluid when once melted. Nearly fill the cavity with the shellac, have the handle dry and warm, and, after binding the portion to be inserted with a fine string, in the form of a loose spiral, drive it home, leave it in position and under some pressure until quite cold.

[There is a sort of cement used by engravers which is used for holding small objects during the process of engraving them, and which is also used for cementing the handles on canes and umbrellas, for fixing braided hair into gold-mounts, etc., which melts at a lower temperature than shellac, and when cold is equally solid. This can be obtained of dealers in engravers' supplies, and its use requires less heat.—Ed. N. R.]

Fruit Juices.—After picking out unripe or decayed fruits, mash them in a tub or barrel with a wooden pounder, and let the pulp stand in a cool place (about 70° Fahr.), for twelve to twenty-four hours, or until the liquid, taken in a silver spoon, appears perfectly bright (owing to the separation of gummy matters by fermentation), then press out the juice, and to every four pounds add one ounce of "cologne spirit" [deodorized alcohol]. Set aside for one night and filter through paper. To the filtered liquid add the requisite amount of sugar to form a syrup (1½ pounds to the pint).

Appert's Process is as follows: Put the expressed juice (omitting alcohol and filtration) into *strong* bottles, leaving some space for expansion of the liquid. Cork tightly, and secure the corks with strong cord. Place the bottles in a vessel as deep as they are tall, resting them on cloth or a perforated board, and separating them by a loose packing of straw to prevent breakage. Fill the vessel with cold water to the shoulders of the bottles, and placing over a gentle fire, bring the temperature slowly to the boiling point. After the boiling has continued ten minutes, remove from the fire and cool slowly. Lastly, seal the bottles with melted sealing-wax.

"Beer Seed" is the name given to a preparation of beer-yeast or to the mother of vinegar (*Mycoderma aceti*), and depending upon the source and the mode of manufacture, is said to resemble pearl sago or shreds of Cooper's sheet gelatin. Another name for it is "*California Ferment*." Its use is to awaken alcoholic and acetic fermentation in saccharine solutions.

Vinegar Plant.—Leave a little cider vinegar, or even plain cider, in a small wide-mouth bottle, to become stale (during hot, close weather is best), until a film appears on the surface. Then add a few fragments of coarse brown sugar, to aid the growth of the plant, and when the film has acquired the thickness of parchment, transfer it to a solution made by dissolving half a pound of molasses and half a pound of brown sugar in two quarts of water. Place the film on the surface of this solution contained in a large jar which should be put into a warm cupboard. The film now grows rapidly, and forms a thick, slippery, gelatinous mass upon the surface of the mixture. In about eight weeks, the saccharine solution will have become excellent vinegar. The plant can now be cut in pieces and put into fresh portions of sweetened water, or it may be dried, and will then resemble the sheets of Cooper's gelatin, being dry, semi-transparent, and tough.

Borax, Glycerin, and Bicarbonates in Combination.—Although the former turns red litmus blue, it is really an acid salt. Owing, however, to its weak chemical affinities, the carbonic acid of a carbonate or bicarbonate is not liberated by it when in a simple watery solution, except with the aid of heat; but in the presence of glycerin, mannite, dextrose, levulose, and some other bodies this chemical action will occur. A simple watery solution of borax has an alkaline reaction, but on the addition of glycerin (or the other substances named) the liquid becomes distinctly acid and capable of expelling carbonic acid from bicarbonate of soda. At the same time, a neutral borate of soda is formed.

Precautions with Benzin as a Moth Destroyer.—The best way to protect woollens and furs from moths is to place the goods in moderately tight boxes, together with a loosely-corked bottle containing benzin. The vapor of benzin soon permeates every part of the box, and soon

destroys all moths, as well as their destructive offspring. The only precaution needed is against fire when such boxes are opened by artificial light. In this case, the light should be at a little distance, and *above* the box. As the vapor of benzin is heavier than air, it flows downward, on escaping from the box, almost like a liquid.

One of the most frequent causes of benzin-fires is the throwing of a lighted match upon the floor where it may ignite the vapor.

Error in the U. S. Dispensatory.—Solution of salicylic acid, on page 101, "Mix the acid and borax with four fluid *ounces* of glycerin," should read *drachms*.

Remedy for Earache.—[A correspondent signing the initials R. H. L., of Baltimore, Md., recommends a mixture of one drachm of chloroform to the ounce of olive-oil as a remedy for earache, twenty-five to thirty drops being poured into the ear which is then to be closed with cotton. The danger of this treatment is that of subsequent inflammation of the tympanum and external canal from the effects of the chloroform, and the oil becoming rancid. Far better is the method of inflating the ear by blowing gently, while the mouth and nose are held closed, and syringing the ear with warm water. Much harm has been done by putting oil, chloroform, laudanum, the heart of roasted onion, and similarly improper things into the ears of children.—ED. N. R.]

Syrup of Cubebs.—Wm. J. T. recommends the following:

Fluid extract of cubeb	2 ounces.
Carbonate of magnesium	½ ounce.
White sugar	12 ounces.
Orange-flower water	½ ounce.
Oil of bitter almond	1 drop.
Water	sufficient.

Rub the fluid extract and oil with the carbonate of magnesium and about one ounce of sugar, add gradually the orange-flower water and four ounces of water. Filter, and add enough water, through the filter, to make the filtrate eight ounces. Add the remainder of the sugar, and dissolve without heat.

The objection offered by the editor to this process is the use of a fluid-extract made with stronger alcohol as a basis, then adding water, and filtering out the oleo-resin thereby rendered insoluble. A better plan is to make a weak tincture, in the first place and dissolve the sugar in it. This would contain the principles, soluble only in water which would not be present in the fluid extract used as the basis of the process suggested.

Tartaric Acid as a Vehicle for Pills of Cinchona Alkaloids.—From twenty to twenty-five per cent of tartaric acid added to quinine, cinchonine, or cinchonidine salts, and the mixture moistened with water, will form a mass which will give small and easily soluble pills.

To Prevent Breakage of Filters.—Besides the plan recommended by a Brooklyn correspondent, of tying a twine not too tightly above the point of the filter, the use of a small piece of filter-paper folded together with the filter proper, so as to double its thickness at the point, will prevent accidental breakage. For filtering caustic liquids, like acid nitrate of bismuth, an additional precaution consists in the insertion of a piece of Swiss muslin, before folding, between the filter and the paper cap.

To Prevent Excessive Sweating.—One drachm of sulphate of quinine is to be dissolved in a pint of alcohol, and the body and limbs are to be bathed with it, a small surface at a time being exposed to prevent catching cold by evaporation Dr. T. H. Currie, of Lebanon, N. H., is said to have found this efficacious during an experience of thirty years.

To Prevent Fading of Colors in Show Windows the Swiss *Gewerbe-Blatt* recommends the use of glass having a slight yellow tint. Where colorless glass is already in use, a coating of copal varnish will accomplish the same purpose.

BIBLIOGRAPHY.

LECTURES ON PRACTICAL PHARMACY. By BARNARD S. PROCTOR, formerly Lecturer on Pharmacy at the College of Medicine, Newcastle-on-Tyne. *Second edition*, with additions and corrections. 8vo. Philade'phia: P. Blakiston Son & Co., 1883, pp. xvi. and 493.

PROCTOR'S lectures have been before the pharmaceutical public for a number of years and are in general so well known that they do not require a detailed review. Though based upon the materia medica and preparations of the British pharmacopœia alone, yet they are so full of valuable hints and practical instruction useful anywhere, that we wish them as large a circulation as possible. To the younger members of the profession they will be especially interesting. There is at present no text-book on pharmacy in the English language in existence which meets the requirements of our advanced knowledge. Even Proctor's work cannot supply this defect, on this side of the Atlantic, but it is the nearest approach we know of at present, to what such a work should be for American pharmacy.

The samples of medical chirography appended to the first edition also accompany the second; and among other additions we find a very complete and practical table of Chemical Formulæ and Solubilities of Pharmaceutical Bodies.

The work is handsomely gotten up; the retail price is $4.50.

LESSONS IN QUALITATIVE CHEMICAL ANALYSIS. By DR. F. BEILSTEIN, Professor at the Imperial Institute of Technology of St. Petersburg. Translated from the fifth edition, with copious Additions, including Lessons in organic and in volumetric Analysis, by CHARLES O. CURTMAN, M.D., Professor of Chemistry in the Missouri Medical College and in the St. Louis College of Pharmacy. 8vo. St. Louis, 1883, pp. viii., 155.

BEILSTEIN'S Qualitative Analysis is very favorably known and used in many chemical schools of the continent. It aims to lead the student, who is supposed to be familiar with the elements of chemistry at least, from the study of the composition of the most simple compounds to that of the more complicated, by a method of teaching which is very effective, namely, the description of every step of the analysis necessary to ascertain the constituents of a known compound. This method is, of all others, the best for self-instruction; and if used in schools, under the guidance of a competent teacher, will produce excellent results. Of course, it needs to be supplemented by a systematic course to be employed when all the constituents are unknown and to be searched for. The author of the present work has struck a happy mean, we think, in constructing the text of this course, avoiding the fault of burdening it with minutiæ liable to confuse the beginner, and still leaving it complete enough for every practical purpose.

The translator has made some very valuable additions to the original. Besides one on the use of the spectroscope, Marsh's test, etc., we meet with another containing examples for practice in analysis of organic substances, and finally a well-written, and concise chapter on volumetric analysis.

The author's and translator's efforts have been well seconded by the publisher, who has produced a very handsome book, excellently printed and bound.

A TREATISE ON THERAPEUTICS. Comprising Materia Medica and Toxicology, with Especial Reference to the Application of the Physiological Action of Drugs to Clinical Medicine. By H. C. WOOD, M.D., Professor of Materia Medica and Therapeutics, and Clinical Professor of Diseases of the Nervous System in the University of Pennsylvania, etc. Fifth edition, revised and enlarged. Philadelphia: J. B. Lippincott & Co., 1883, pp. 740, 8vo.

THIS is undoubtedly the most popular text-book on therapeutics by an American author. Its peculiarity consists in the fact that the so-called physiological action of drugs is

made the basis for its construction. Professor Wood was one of the first to collect in systematic form the results of drug experiments made upon animals, and has himself contributed much towards filling in the gaps which necessarily exist in a scientific classification of such recent origin. Besides the information respecting such articles as are commonly considered to be medicinal, there are excellent chapters upon disinfectants, caloric, and electricity and also a chapter on prescribing, a subject which often is treated too briefly, if at all, for the need of students. The work also contains useful tables of weights, measures, proportions, etc., and diagrams illustrating the location of nerves suitable for the application of galvanism. In its present form there is no work better fitted to teach a student the essentials of materia medica and therapeutics.

PHYSIOLOGICAL CRUELTY, or FACT *vs.* FANCY: An Inquiry into the Vivisection Question. By PHILANTHROPOS. New York: John Wiley & Sons, 1883, pp. 156, 8vo.

THE anonymous writer is evidently a Briton, and has at his command the facts and arguments relating to vivisection which, during the past five years or more, have created almost endless comment and discussion in every stage of British society, from the throne downward. This controversy, like many others, has been most bitterly waged on the part of those who know least of the subject, and has given rise to so many misstatements and unwarranted assumptions that it is surprising that any writer could have been found possessed of the courage and ability to attempt its elucidation. Nevertheless, such a one appears to have come forward, and no one can read his book without feeling that his defence of vivisection, on the ground of humanity, and of the medical profession, from the charge of wilful cruelty, is both able, honest, and unanswerable.

THE AMERICAN HOMŒOPATHIC PHARMACOPŒIA. Second edition. Thoroughly revised and augmented. By JOSEPH T. O'CONNOR, M.D. Boericke & Tafel, New York, Philadelphia, and Chicago, 1883, pp. 511, 8vo.

OWING to adverse criticism of the first edition, it was suppressed, and the work entirely revised by Prof. O'Connor. The objectionable "Nosides" have been left out, and the portions which in the first edition were copied from other sources have, apparently, been rewritten. There is now no apparent reason why the work should not receive the confidence and patronage of all who have need for a homœopathic pharmacopœia, since it is certainly superior to any similar work yet published. It is handsomely printed with good type, on excellent paper, and the arrangement of matter is adapted to its uses as a work for reference.

The preliminary chapter on Homœopathic Pharmacy gives plain directions for the preparation of such forms of remedies as are more or less peculiar to this mode of practice. The body of the work has numerous descriptions of articles but little used (if at all) outside of homœopathic practice.

PROCEEDINGS OF THE SECOND ANNUAL MEEETING OF THE MASSACHUSETTS STATE PHARMACEUTICAL ASSOCIATION. Held in Springfield, May 16th and 17th, 1883, pp. 198, 8vo.

IT is seldom that we see a handsomer report of a society or one which contains as interesting and valuable matter as that here noticed. Pharmaceutical legislation and trade interests received a large share of attention at the meeting, but scientific matters were by no means neglected, as the long list of excellent papers shows. The Association is to be congratulated not only upon the ground of its virility, but also upon the possession of a publishing committee having energy and good taste.

ON THE RELATIONS OF MICRO-ORGANISMS TO DISEASE: The Cartwright Lectures Delivered before the Alumni Association of the College of Physicians and Surgeons, New York, February 19th, 21st, 24th, 27th, 1883. By WILLIAM T. BELFIELD, M.D., etc. Reprinted from *The Medical Record*. Chicago: W. T. Keener, 1883, pp. 131, sm. 8vo.

THIS series of four lectures by Prof. Belfield has been generally acknowledged to be one of the clearest and most comprehensive statements of the subject which has appeared. It is beautifully illustrated, and affords, in this shape, the opportunity for careful reading and preservation which are hardly to be obtained in the form in which it was originally published.

BACTERIA AND THE GERM THEORY OF DISEASE: Eight Lectures delivered at the Chicago Medical College by DR. H. GRADLE, Prof. of Physiology, etc. Chicago: W. T. Keener, 1883, pp. 219, 8vo.

THE author considers the subject even more fully than it is done by Dr. Belfield in the course of lectures noticed elsewhere, and while this work lacks the beautiful illustrations possessed by the other, its text is rather better adapted for the guidance of one who wishes to make a practical study of disease germs. It is, moreover, provided with an excellent table of contents and an index, and will thus become useful as a work for reference. In typography and style of workmanship, it does credit to its publisher.

HAND-BOOK OF THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE THROAT, NOSE, AND NASO-PHARYNX. By CARL SEILER, M.D., etc. Second edition. Thoroughly revised and greatly enlarged. With seventy-seven illustrations. Philadelphia: Henry C. Lea's Son & Co., 1883, pp. 295, 8vo.

THE additions entering into this new edition are said by the author to be chiefly in the chapter on Diseases of the Nasal Cavities. About one-third of the book is quite properly devoted to the description of apparatus required, methods for making examinations and treatment, a small portion of this space being devoted to the anatomy of the regions. The subsequent portions of the work, relating to diseases of the nose, pharynx, and larynx, are also quite full of practical suggestions regarding mechanical therapeutics.

THE NATURAL CURE OF CONSUMPTION, CONSTIPATION, BRIGHT'S DISEASE, NEURALGIA, RHEUMATISM, "COLDS" (Fevers), etc. How Sickness Originates, and how to Prevent it. A Health Manual for the People. By C. E. PAGE, M.D. New York: Fowler & Wells, 1883.

EAT one meal a day; avoid meats; exercise a great deal in the open air; never smoke, nor drink anything but water; acquire a love for whole wheat and fruit," etc., etc., is a fair sample of what appear to be the author's views. It is needless to say that they are hardly likely to become popular. The work is chiefly of the order commonly known as "bosh."

DEEP BREATHING AS A MEANS OF PROMOTING THE ART OF SONG, AND OF CURING WEAKNESS AND AFFECTIONS OF THE THROAT AND LUNGS, ESPECIALLY CONSUMPTION. By SOPHIA MARQUISE A. CICCOLINA. Translated from the German by EDGAR S. WERNER. New York: M. L. Holbrook & Co., pp. 48, sm. 8vo.

THE object of this work is expressed in its title. The method recommended is that of deep, voluntary, abdominal respiration. The writer is evidently very familiar with the subject, and speaks less from a theoretical knowledge than from such as is obtained from personal experience and observation. There is no doubt that timely attention to the precepts here taught would prevent much illness, and might aid recovery when disease has become established.

A NEW SCHOOL PHYSIOLOGY. By RICHARD J. DUNGLISON, A.M., M.D., etc. Illustrated with one hundred and seventeen engravings. Philadelphia: Porter & Coates, pp. 314, 8vo.

WE have already referred to the excellence of a former edition of this book, which is now, with some slight revision, again published. It is particularly well adapted for popular use and as a text-book in advanced schools.

NEW PATENTS.

Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, with twenty-five cents fo each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.]

280,515. *Removable Lip, for Cups, Bottles, etc.*—Jacob Rhoads, Watsontown, assignor to himself and Edgar K. Rhoads, Mahanoy City, Pa. An elastic band provided with a lip.

280,697. *Corkscrew.*—Joseph W. White, Brighton, Iowa.

280,798. *Bottle Tap.*—Joseph W. Colcord, Lynn, Mass. A bottle tap provided with a rubber bulb and air passage for forcing air into a bottle after screwing the tap through the cork.

280,860. *Acid Carboy Support.*—Alvin D. Puffer, Medford, Mass. The trunnions on which the box is turned are provided with clamps and binding screws for grasping opposite sides of the case.

280,893. *Treating Waters containing Glycerin obtained by the Decomposition of Fatty Matters.*—Edmund Baujard, Aubervilliers, France, assignor to John W. Mackay, Virginia City, Nevada.

280,894. *Extracting Glycerin.*—Edmund Baujard, Aubervilliers, France, assignor to John W. Mackay, Virginia City, Nevada.

281,043. *Device for the Medical Treatment of the Male Urinary Organs.*—Henry E. Finney, Las Vegas, New Mexico.

281,110. *Turpentine Scraper.*—Jas. Mitchell, Bill, Ga.

281,114. *Inhaler.*—Stephen A. Morse, San Francisco, Cal.

281,161. *Compound for Hog Cholera.*—John A. Thomas, Montfort, Ill. Finely pulverized mixture of madder, copperas, sulphur, nitrate of potash, sulphuret of antimony, charcoal, gentian root, hyposulphite of soda, and arsenic.

281,391. *Elastic Label.*—John Nuhn and Frederick Kuhne, Jersey City, N. J. The bottle label formed from the shield or crescent-shaped metal blank into a substantially open spring-ring, and bearing a suitable inscription.

281,396. *Apparatus for Filling Bottles, Lamps, etc.*—Chas. C. Redmond, San José, Cal.

281,521. *Disinfectant.*—Charles T. Kingzett, Tottenham, and Maximilian Zingler, Belsize Park, County of Middlesex, England. Consisting of liquid volatile hydrocarbon spirit, containing terpene, non-volatile resin, camphor, and rosin oil.

281,567. *Measurer and Weigher Combined.*—Frank Schneider, Syracuse, New York.

281,727. *Funnel.*—Aaron B. Pratt, Cambridge, Mass.

281,942. *Atomizer.*—Benj F. Sutton, New York, N. Y., assignor to Daniel C. Perkins, Providence, R. I.

281,973. *Pill-Coating Machine.*—Geo. F. Chappell, New York, N. Y.

Opium in San Francisco.—Every Oriental steamer brings in about a quarter of a million in opium, and as none goes East, it is estimated that the stock on hand by July 1st, when the advance in duty goes into effect, will be four millions. All the Chinese dealers carry big stocks, but the bulk of this opium is in the banks. The bankers regard it as all good, and loan three-quarters of its value on it. Not less than $2,000,000 in opium, in neat 40-lb. boxes, is now in local bank vaults. The Chinese put no faith in warehouses, as they fear tampering with opium.—*San Francisco Dispatch to Tribune.*

ITEMS.

American Pharmaceutical Association.—Mr. G. P. Engelhard, of 89 Randolph street, Chicago, wishes us to say that excursion rates from Chicago to Washington have been obtained over the Balt. & Ohio R. R. Half-rate tickets for the round trip, at $17.50, can be had upon certificate by Mr. Engelhard, who has also made arrangement for a special sleeping-car at reduced rates. Excursion tickets to Washington will be sold from the different points on the Pennsylvania Railroad upon card orders, which may be procured from the Permanent Secretary, The rates from New York will be $9.80; from Philadelphia, $6.00, and from other points in proportion. The tickets will cover the meetiug of this and of the National Retail Drug. Association.

New Jersey Board of Pharmacy.—The Governor has reappointed Messrs. Ch. Holzhauer and R. W. Vandervoot, of Newark; W. R. Laird, of Jersey City; A. P. Brown, of Camden, and G. A. Mangold, of Trenton.

The Board will hold meetings for examining candidates for license on October 18th, at Paterson; January 17th, at Trenton; April 17th, at Camden; and July 17th, at Newark.

Delaware Board of Pharmacy.—Under the new law, which went into effect on the first of August, the Governor has appointed the following-named gentlemen to serve as the Delaware Board of Pharmacy: John B. Price and James H. Morgan, of Wilmington, and T. C. Roe, of Dover.

International Exhibition in Nice.—In December next, an international exhibition will be held in Nice, France, to which materials connected with pharmacy will be admitted. Pharmaceutical preparations will form Class 8, and Mineral Waters Class 9, of Section II.

Doliber, Goodale & Co.—Mr. Thomas Doliber, formerly of the firm of T. Metcalf & Co., Boston, who has for some time past had special charge of the Mellin's Food department, has taken this portion of the business upon his own hands, in association with Mr. T. T. Goodale. The new firm starts out with the most promising propects of a successful career.

Hance Brothers & White, manufacturing chemists of Philadelphia, had the misfortune to suffer the entire destruction of their laboratory and contents, on Callowhill street, by fire, on the 7th of August. The loss, estimated at $25,000, is covered by insurance.

Theft of Quinine.—Two emp'oyés of Keasbey & Mattison, of Philadelphia, were lately arrested for stealing quinine. The matter was placed in the hands of a detective, who learned that quinine had been offered for sale by William Billeafeldt, who a year ago was a foreman in the employ of Keasbey & Mattison, and that the material was stolen by John Bart, one of the workmen in the employ of the firm. Bart was arrested, and between $5,000 and $6,000 worth of quinine in various stages of manufacture was found in his house. Bart declares that he bought the crude quinine from a travelling salesman. Billeafeldt was also arrested, but denied all knowledge of the affair, and when taken from the house both he and his wife threatened to commit suicide.

Misfortunes of a Brooklyn Pharmacist.—A suit has been brought against a Brooklyn pharmacist under the following painful circumstances: It appears that the pharmacist, whom we will call E., while sleeping in his store, was annoyed by mischievous boys of the neighborhood, who rang his night-bell and then jeered at him from a safe distance when he answered it. Determined to revenge himself, he procured a bat and decided to lie in wait for the first boy who attempted to play the trick again. But it happened that the first time his night-bell was disturbed

after he had so armed himself, it was rung by Mr. R., who sought to have a prescription compounded. He rang once, and E. softly stole to the door with his club. R. rang again, and at that moment the enraged druggist pounced upon him and dealt him several heavy blows over the head and shoulders, inflicting severe injuries. R. now seeks legal redress.

Philadelphia College of Pharmacy.—The clinical labora ory will hereafter be under the direction of Professor S. P. Sadtler, assisted by Professor Henry Trimble, Ph.G., a former pupil of Professor Genth. The latter is now in Europe, where h: is acquainting bimself with the arrangement and methods of notable laboratories.

Proportion of Physicians to Population.—THE proportion of physicians to population is given as follows by the *Siglo Médico:*

France	2.91	per 10,000.
Germany	3.21	" "
Austria	3.41	" "
England	6.	" "
Hungary	6.10	" "
Italy	6.10	" "
Switzerland	7.06	" "
United States	16.24	" "

Another Prospective Advance Towards Artificial Quinine?—In the session of the Imperial Academy of Sciences of Vienna, held on June 14th, 1883, Prof. Dr. Zd. H. Skraup requested that a sealed letter deposited by him with the Academy on July 20th, 1882, for the purpose of protecting his right of priority, be opened, and the paper therein contained, under the title, *Zur Constitution des Chinin und Chinidins* (Contribution "towards the constitution of quinine and quinidine") be published in the proceedings. At the same time, he requested that a second letter, referring to the same subject, and deposited at the same time, be reserved for future disposition.

Political Economy in a Nut-shell.—The following quotation from the *Scientific American* of July 28th gives no authority for its basis, and may be, like many other statements of what profess to be facts, open to criticism, but it is certainly suggestive of truth: "Assuming the produce of labor be 100 in Great Britain, 56 parts go to the laborer, 21 to capital, and 23 to the government. In France, 47 parts go to the laborer, 36 to capital, and 17 to the government. In the United States, 72 parts go to the laborer, 23 to capital, and 3 to the government.

Removing Silver Stains.—To remove silver stains from the hands, says Liesegang (*Pharm. Rundsch.*), wash with the following solution: Iodine, 1; iodide of potassium, 10; water, 100; ammonia, 1; or with muriatic acid containing an excess of fresh copper filings.

Modelling Wax.—

Clear wax	200 parts.
Venice Turpentine	26 "
Lard	13 "
Precipitated bole	145 "

Mix, and knead the mass in water.—*Ind. Bl.*

The Bark of a Diminutive Cinchona Succirubra, which had been raised in the garden of the Faculté de Médecine at Paris, some four years ago, and withered away in 1882, has been analyzed by Regnauld and Villejean, and found to contain 1.47 per cent of quinine, and 1.05 per cent of cinchonine.

Statistics of the Consumption of Coffee in Europe.—The following quantities were used, according to Dr. Th. Peckolt:

Year.	Kilos.	Year.	Kilos.
1750	39,600	1864	287,617,450
1811	66,750	1865	316,757,450
1830	133,200,000	1868	381,242,450
1832	119,531,250	1870	400,762,450
1842	211,200,000	1871	420,599,000
1852	153,140,000.		

—*Zeitsch. Oest. Apoth. Ver.*

Adulerated Quinine in Paris.—It will be remembered that the authorities of a Parisian hospital discovered, not long since, that the quinine furnished them in cans bearing the label of the well-known Milan factors, was largely adulterated with cheaper salts. The Milan house at once took legal proceedings to vindicate their honesty, and as a result Lacombe, the French wholesale druggist who supplied sulphate of cinchonidine, and was paid for quinine, has been sentenced to a year's imprisonment, a fine of 50 francs, the public display of twelve copies of the sentence, one of them during twenty-four hours at the door of Lacombe's warehouse, and the expense of publishing the judgment in a dozen French medical and pharmaceutical journals.

Sugar of Milk as a Laxative is recommended by Traube, who says that two to three drachms, taken in a tumbler half full of warm milk, before breakfast, will prove effectual. Better than this, for use with children, is bread and molasses. Neither will be likely to do much good in overcoming decided constipation or costiveness; but the latter will often answer, when a mild laxative only is required, quite as well as drugs.

Saffranin, one of the new azo colors, is recommended by the *Pharm. Central.* as cheaper and better than alkanet for coloring oils, pomades, cerates, etc. One part of saffranin is dissolved in a mixture of 20 parts of alcohol and 80 of water. The color is permanent, and is not destroyed by borax or similar substances.—*Chemist and Druggist.*

Panclastite ("all-breaker") is the name of a new explosive, discovered by Turpin, which is far more energetic than even dynamite, but is much safer to handle, inasmuch as it requires a much more powerful shock to cause it to explode. Ordinary blasting powder is exploded by the shock produced by an iron weight of six kilos falling from a height of sixty centimeters; dynamite by the same weight falling twenty-five centimeters; but the new substance, panclastite, requires that the same weight should fall a distance of four meters before it explodes. It is a liquid, and is said to consist of a mixture of bisulphide of carbon and hyponitric acid (prepared from nitrate of lead). Either liquid, by itself, is non-explosive, but the mixture is the most powerful explosive so far known.—*Rundschau (Leitmeritz).*

PHARM. CALENDAR FOR SEPTEMBER.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Mon. 3d.	Erie Co. Pharm. Assoc.—Meet at Buffalo.
	Pittsburg Coll. Pharm.
Tues. 4th.	St. Joseph (Mo.) Pharm. Assoc.
Thurs. 6th.	Louisville Coll. Pharm.—Pharm. Meeting.
Friday, 7th.	Cleveland Pharm. Assoc.
Sat. 8th.	National Retail Druggists' Assoc.—Preliminary Meeting at Washington.
Tues. 11th.	American Pharm. Assoc.—Meets at Washington.
	Kings Co. Pharm. Soc.—Meets at B'klyn.
	National Coll. Pharm.
Wed. 12th.	New York Boark of Pharm.
Thurs. 13th.	Newark Pharm. Asso.—Meeting.
	Philadelphia Coll. Pharm.—Alumni Phar. M.
	Maryland Coll. Pharm.
	N. Y. German Apothecaries.
	Lancaster Pharm. Assoc.
Tues. 18th.	St. Joseph (Mo.) Pharm. Assoc. Meet.
Mon. 24th.	Philadelphia Coll. Pharm.—Semi-annual M.
Tues. 25th.	Boston Druggists' Assoc.
Thurs. 26th.	Kings Co. Board of Pharmacy.—Meets at Brooklyn.